Aggression and Violent Behavior 85 (2025) 102080

Contents lists available at ScienceDirect

Aggression and Violent Behavior

journal homepage: www.elsevier.com/locate/aggviobeh

A meta-analysis of recidivism rates among individuals who commit child sexual exploitation material (CSEM) offending☆

Serra Baskurt [a], Kelly M. Babchishin [a,*], Gabriella Hilkes [a], Michael C. Seto [b]

[a] Department of Psychology, Carleton University, Canada
[b] University of Ottawa's Institute of Mental Health Research at The Royal, Canada

ARTICLE INFO

Keywords:
CSEM
Child pornography
Recidivism
Reoffending
meta-analysis

ABSTRACT

A critical challenge for managing individuals with Child Sexual Exploitation Material (CSEM) offenses is addressing their risk of sexual recidivism, especially contact sexual offending. We report on a meta-analysis of 30 non-overlapping samples (total $N = 25{,}978$), with 26 samples identifying CSEM index offenses and subsequent recidivism using official sources (e.g., charges) and four samples identifying CSEM offenses and subsequent recidivism using self-report. Individuals with CSEM offenses based on official sources showed a fixed-effect recidivism rate of 5.9 % any sexual (95 % CI = [5.6, 6.3], k [studies] = 21, $N = 19{,}112$), 1.5 % contact sexual (95 % CI = [1.4, 1.7], $k = 20$, $N = 18{,}543$), and 4.1 % CSEM (95 % CI = [3.8, 4.4], $k = 21$, $N = 13{,}522$), after an average of 5-year follow-up. Based on official sources, the odds of contact sexual offenses among Mixed individuals (CSEM plus contact sexual offending) were 16 times higher than CSEM-Exclusive individuals (exclusively CSEM offenses in their sexual offending history) at 8.8 % versus 0.6 % (OR = 15.99), respectively. There were several other significant moderators: National sources of official recidivism data produced higher rates than local sources ($Q_\Delta = 58.1$, $p < .0001$, $df = 1$); official recidivism had lower rates than self-reported recidivism ($Q_\Delta = 232.2$, $p < .0001$, $df = 1$); longer follow-ups were associated with higher rates (unstandardized $B = 0.01$, $Z = 75.8$, $p < .001$); and more recent studies showed higher rates, unstandardized ($B = 0.002$, $Z = 68.0$, $p < .001$). This meta-analysis establishes new recidivism base rates for individuals with CSEM offenses, which can be used to inform risk-driven policies and practices.

1. Introduction

The creation, sharing, and viewing of Child Sexual Exploitation Material (CSEM; legally referred to as child pornography in the United States and other countries) have increased yearly (Savage, 2024; United States Department of Justice, 2016). Accurately characterizing the recidivism base rates of those who commit CSEM offenses is vital for effective and efficient policies and practices (Wells et al., 2007). Both sexual and non-sexual recidivism rates help judges determine sentences and probation/parole professionals to set supervision expectations to reduce reoffending (Hamilton, 2011). These estimations are also crucial at the individual level, as they directly influence risk assessment, how risk is communicated, and treatment decisions.

Research has increasingly documented the clinical and sexological characteristics of individuals who commit CSEM offenses (e.g., Krueger et al., 2009; Kuhle et al., 2017), highlighting how they differ from individuals with contact sexual offenses (Babchishin et al., 2015). Seiser et al. (2023) examined the prevalence of mental disorders among incarcerated men convicted of CSEM offenses and found high rates of psychiatric comorbidity, including mood, anxiety, and impulse-control disorders, further emphasizing the complexity of clinical needs among this group. Prevention-based research, such as the German Dunkelfeld

☆ The authors would like to thank the lead authors of the studies included in this meta-analysis, specifically Angela Eke, Chad M. Steel, Christopher Dowling, Elias Ghossoub, Erik Faust, Jérôme Endrass, Jürgen Müller, Kristin Tennyson, Laura Quinten, Philip Howard, Sandy Jung, Thomas Cohen, Ute Lampalzer, and Virginia Soldino for their generosity in providing clarifications and additional data. This study would not have been possible without their contributions. We also like to thank Maaike Helmus for their friendly review of an earlier draft of this manuscript. This study was conducted as part the first author's Master's thesis in Psychology at Carleton University and, as such, we would like to thank the committee members (Angela Eke, Kasia Muldner, and Kevin Nunes) for their helpful comments. The full thesis is available through ProQuest. Supplemental materials including data and syntax files are available on OSF.

* Corresponding author at: Department of Psychology, Carleton University, 1125 Colonel by Drive, Ottawa, Ontario K1S 5B6, Canada.
E-mail address: kelly.babchishin@carleton.ca (K.M. Babchishin).

https://doi.org/10.1016/j.avb.2025.102080
Received 13 November 2024; Received in revised form 23 May 2025; Accepted 25 August 2025
Available online 28 August 2025

Project, has further underscored that individuals who use CSEM but seek help before committing contact sexual offenses tend to present with high distress and motivation for self-regulation, highlighting the heterogeneity in risk and treatment needs within this group (Beier et al., 2024).

Individuals with CSEM offenses vary in their criminal histories (Seto et al., 2011). CSEM-Exclusive individuals refer to those who solely commit CSEM offenses as part of their sexual offending history, while Mixed individuals (also referred to as dual offending individuals; Goller et al., 2016) are individuals who have both a CSEM and a contact sexual offense. The term "Any CSEM" refers to those who have committed CSEM offenses but may or may not have contact sexual offenses in their criminal history. The definition of CSEM-Exclusive differs between studies, with some scholars using the term to describe individuals who have exclusively committed CSEM offenses in their sexual offending history (e.g., Elliott et al., 2019), while others use it to refer to those who have both CSEM and other non-contact sexual offenses, such as voyeurism and exhibitionism, but no contact sexual offense (e.g., Eke et al., 2019).

Beyond their shared history of CSEM offending, the rates of other types of prior offenses vary between Mixed and CSEM-Exclusive individuals. Seto and Eke (2015) found that Mixed men were much more likely to have prior offenses than CSEM-Exclusive men (84 % vs. 2 %), similar to other studies (e.g., Eke et al., 2019; Elliott et al., 2009; Nicol et al., 2021). Further, CSEM-Exclusive individuals are, in general, lower on risk-relevant factors – including antisocial personality traits, offense-supportive cognitions about children or sex, and sexual interest in children – than those who commit Mixed offenses (Babchishin et al., 2015; Baskurt et al., 2024).

Given that atypical sexual interests, particularly pedophilia, are among the best predictors of sex offenses against children (e.g., Hanson & Morton-Bourgon, 2005), and that individuals with CSEM offenses are more likely to have pedophilic tendencies than those who solely commit contact sexual offenses (Babchishin et al., 2011; Babchishin et al., 2015; Babchishin et al., 2018), it would follow that individuals with CSEM-Exclusive offenses would also be at risk for committing contact sexual offenses against children. This assumption is based on the *gateway hypothesis*, which suggests that engaging in lower-degree antisocial behaviors increases one's likelihood of engaging in higher-degree antisocial behaviors in the future (Steiker, 2013). Yet a previous meta-analysis showed that those with CSEM-Exclusive offenses rarely progress to contact sexual offenses (Seto et al., 2011). Mixed individuals are more likely to commit new contact sexual offenses (Babchishin et al., 2018; Seto & Eke, 2015). Babchishin, Eke, et al. (2022) found that nearly all men with CSEM offenses (98 %) were CSEM-exclusive individuals in a trajectory study with an average of 20-year follow-up.

1.1. Recidivism

Seto et al. (2011) was the first meta-analysis examining recidivism rates among those who commit CSEM offenses (9 studies, total sample of 2630 individuals). Overall, 4.6 % (n = 121) had a new sexual offense after a 1.5- to 6-year follow-up; most of the follow-up times were less than 4 years (M = 3.3) and all studies used official criminal records to assess the recidivism rates. Data regarding the type of sexual reoffending was accessible for 1247 individuals. Of these, 2.0 % (n = 25) of individuals had a new contact sexual offense, and 3.4 % (n = 43) had a new CSEM offense. Seto et al. (2011) speculated that there may be a distinct subgroup of CSEM-Exclusive individuals who do not differ from the general population or at least other justice-involved individuals in their risk of contact sexual reoffenses but were not able to make the comparison. In addition, the authors did not assess potential moderators (e.g., country) related to different recidivism rates and had a short average follow-up (> 4 years) as a function of the research studies and the small number of samples available at the time. More recently, Helmus (2023) provided a summary review but did not complete a comprehensive search of the literature, did not meta-analyze the samples, and did not assess for possible moderators.

1.2. Factors influencing recidivism rates: a methodological note

Accurate prediction of recidivism requires considering the duration of the follow-up period, the specific criteria used to define recidivism, the assessed risk level associated with the individuals, subgroup of CSEM offenses, geographical location (i.e., related to quality of recidivism rates) and the inclusion of data on other criminal offenses. Self-reported recidivism rates are higher than official recidivism rates (Beier et al., 2015; Seto et al., 2011) and self-report sources are helpful to give an estimate of the size of undetected recidivism rates.

The purpose of this study was to extend the Seto et al. (2011) meta-analysis of recidivism rates of individuals who commit CSEM offenses. We hypothesized that self-report rates would be higher than official rates, that the subgroups of CSEM individuals would have meaningfully different reoffending rates, that contact sexual recidivism rates would be low for CSEM-Exclusive subgroup, and that studies that used more comprehensive recidivism sources (e.g., national rather than regional sources) would provide higher recidivism rates. Besides sexual recidivism rates, we also examined nonsexual recidivism rates because some of these individuals will engage in a broader range of criminal behaviors beyond sexual offenses (Babchishin, Eke, et al., 2022; Wolak et al., 2011). From a criminal justice perspective, any form of recidivism is a negative outcome, as it undermines public safety and strains community resources. Moreover, some seemingly nonsexual violence may actually be sexually motivated, particularly in cases involving plea bargains that may obscure the true nature of the offense (Letourneau et al., 2013). For example, an attempted sexual assault may instead be charged as an assault because the defendant will plead guilty to the lesser charge and that spares the victim from having to testify. Therefore, our study examines all reported types of recidivism—including any sexual, contact sexual, CSEM, any violent (including contact sexual), nonsexual violent, and any recidivism— to gain a comprehensive understanding of recidivism rates of CSEM individuals.

2. Method

2.1. Selection of studies

The search strategy used for the current systematic review was: (CSEM, child sex* exploitation material, child porn*, online sexual offend*, internet sex* offend*, contact sex*, offline sex*, indecent image*) AND (recid* reoffen*, reconvict*, arrest*, failure, predict*, risk assess*, relapse*, risk factor*).[1] We searched Criminal Justice Abstracts, Web of Science, PsycINFO, Google Scholar, and Canada, U.S., and Australia government websites. We used a systematic review tool, Covidence (2024), to complete our literature review. The search was completed on October 2, 2023 and reran on April 10, 2024.

We also reviewed the references of the articles found, and all studies included in the previous meta-analysis were included in the current meta-analysis except for studies that overlap with more recent studies. In such cases, the study with the longest follow-up was used, unless the longer follow-up period resulted in the loss of more than 20 % of the sample. To reduce publication bias, we conducted additional search strategies, including reviewing conference programs, journals not included in the major electronic databases, Online First articles, and contacting the Listserv of the Association for the Treatment and Prevention of Sexual Abuse (ATSA) to solicit unpublished data. Studies were screened for potentially relevant data and, if needed, we contacted lead authors of the studies to obtain the necessary information to

[1] The asterisks (*) is a wild card signal that can represent any sequence of characters in the search query. For example, if we search for "child sex*", the asterisk will match any word that starts with "child sex", such as "child sexual".

calculate the effect size *p* or for clarification on the coding forms (e.g., if additional information is required to code sample type) or ascertain the presence of overlapping studies. Google Translate was used to ascertain if identified non-English studies were relevant and codable. The PRISMA flow chart is provided in Fig. 1. The meta-analysis was pre-registered to Open Science Framework (OSF; https://osf.io/shgax/?view_only=d55f640a9ff2491a8faaf3423172a2c7).

2.2. Coding procedure

To be eligible for inclusion, quantitative studies had to: (1) report the recidivism rates of individuals with CSEM offenses using one of the following methods: (a) rates based on official data (breaches/investigations/arrests/charges/convictions), or (b) rates based on self-reports, (2) include an identifiable sample of adults (i.e., ≥ 18 years of age) who have committed (or have been accused of committing) Any CSEM offenses, (3) report the length of follow-up and the source of

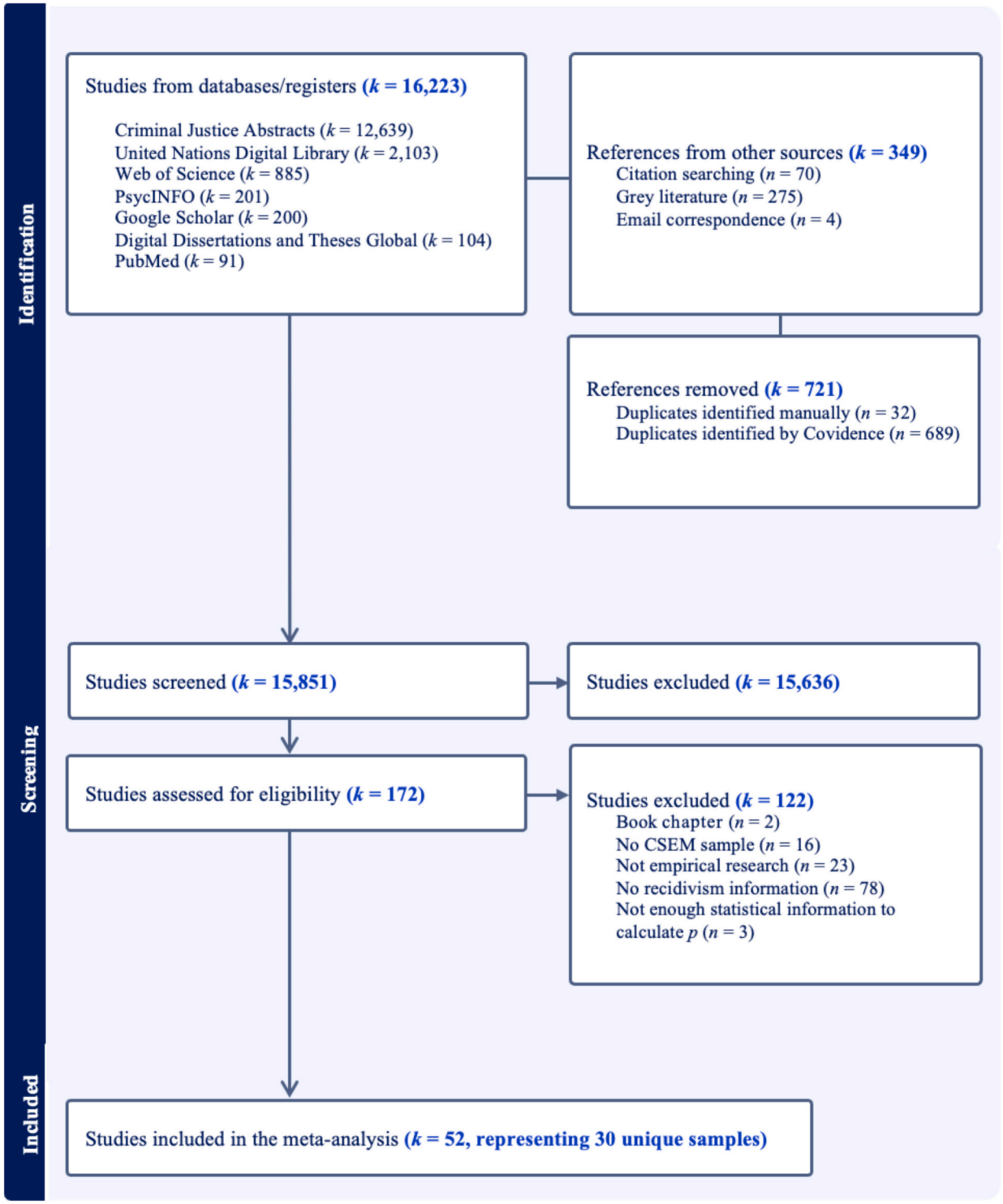

Fig. 1. Study flow diagram following PRISMA guidelines.

information, (4) include sufficient statistical information to calculate effect size *p,* which indexed the proportion of recidivists ($n_{recidivists}/N_{total}$) in the follow-up sample (or the authors provided sufficient information to calculate *p*), and (5) use a prospective or pseudo-prospective study design to capture recidivism. Prospective designs involve identifying individuals based on an index CSEM offense at a single time point, with recidivism subsequently coded after a defined follow-up period. In contrast, pseudo-prospective designs refer to instances in which both the index offense and recidivism outcomes are coded concurrently by the researcher. For example, the index CSEM offense may be identified using dated archival records, and recidivism data (for any subsequent offenses) are extracted at the same time from administrative or criminal justice databases. Qualitative studies were not eligible. Studies did not need to report a control group of individuals with non-CSEM offenses. Authors were contacted whenever we had missing information. Reporting the recidivism rates for the two subgroups (CSEM-Exclusive vs. Mixed) separately was not an inclusion criterion for this meta-analysis. Authors for studies that only reported on Any CSEM were contacted to see if they were able to provide the recidivism rates separately or provide the proportion of CSEM-Exclusive individuals in their Any CSEM grouping.

Overlap between studies was identified using release year, location, and sample details provided in the methods. When needed, authors were contacted for clarification and, in some cases, overlap decisions were informed through discussions with multiple study authors. Procedures for dealing with sample overlap are described in the Coding Manual (see https://osf.io/shgax/?view_only=d55f640a9ff2491a8faaf3423172a2c7 for Coding Manual).

Of the 30 non-overlapping samples, 26 samples identified CSEM index offenses and subsequent recidivism using official sources (e.g., charges), and four samples identified CSEM offenses and subsequent recidivism using self-report. Table s1 outlines the study characteristics for samples that report official recidivism rates and Table s2 for self-report samples. For official sources, the samples included Canada (26.9 %, $k = 7$), the United States (19.2 %, $k = 5$), the United Kingdom (11.5 %, $k = 3$), Australia (11.5 %, $k = 3$), Switzerland (7.7 %, $k = 2$), among other countries (one study each). Data collection spanned 48 years from 1973 to 2021, though most were drawn in the 2000s (*Mdn* = 2005 to 2011; see Table 1). Most of the studies were peer-reviewed (84.6 %, $k = 22$). Additional information (e.g., overlap clarification, additional rates for the subgroups) was received from 46.2 % of the study authors. Studies focused on Any CSEM individuals made up 23.1 % ($k = 6$), while those providing data on CSEM-Exclusive and Mixed subgroups comprised 57.7 % ($k = 15$) of the sample. Some studies also included either Any CSEM and CSEM-Exclusive (15.4 %, $k = 4$) or Any CSEM and Mixed subgroups (3.8 %, $k = 1$) in their sample (see Table s3 for list of CSEM recidivism studies with recidivism outcomes).

A total of 51 studies representing 30 unique samples (26 official samples, 4 self-report samples) provided a total of 419 effect sizes. Most of our sample consisted exclusively of men (Any CSEM $M = 84.6$ %, $k = 22$) who were on average in their early to late 40s (Any CSEM $M = 42.8$, $SD = 8.1$, $k = 17$; CSEM-E $M = 43.9$, $SD = 10.8$, $k = 9$; Mixed $M = 47.5$, $SD = 9.7$, $k = 8$; see Tables s4 [official] and s5 [self-report] for sample characteristics).

2.2.1. Interrater reliability

Interrater reliability was calculated for the remaining 22 samples, after 8 practice samples. The raters coded 256 common effect sizes, with high levels of agreement (absolute intraclass correlation [ICC] based on two-way random effects with absolute agreement = 0.99). Twenty-four effect sizes were identified by one rater but not the other. For the other variables coded, the agreement for categorical variables was between 77.3 % and 100 % ($k = 47$; *Mdn* = 100 %, $k = 44$; κ varied from 0.46 to 1.00, *Mdn* = 1.00, $k = 47$). The low κ of 0.46 (criminal justice involvement: yes or no) was associated with a high percentage agreement of 90.9 % with raters agreeing in 20 of the 22 interrater samples; thus, the low κ was a result of distribution on κ size and the variable was retained for analyses. For continuous variables, ICC values ranged from 0.94 to 1.00 (*Mdn* = 1.00; $k = 56$), excluding the effect size *p* (for item-level data, see Material s1). All studies were coded by the first and third authors and, when there was a disagreement in coding, a consensus was reached following interrater reliability analyses.

2.3. Data analysis

All analyses were double-run by the first and third authors using the *metafor* and *dplyr* packages in R studio, and the syntax can be found on this https://osf.io/shgax/?view_only=d55f640a9ff2491a8faaf3423172a2c7.

2.3.1. Effect size

We transformed individual study findings into a common effect size, *p*, which indexed the proportion of recidivists ($n_{recidivists}/N_{total}$) in the follow-up sample. Using a standard formula (Fleiss et al., 2003), we calculated the variance of *p* as:

$$\text{Variance of } p = \frac{p(1-p)}{n}$$

Raw proportions, which are the ratio of the number of events to the total number of observations in a group, are easily interpreted and provide a simple summary measure of the outcome of interest. However, they are not ideal for meta-analyses with low-frequency events because they do not account for differences in sample sizes across studies and can lead to biased estimates of the overall effect size. Many variance stabilization transformations are available for proportions, the most common and practical is the arcsine transformation (Ă), defined as:

$$\breve{A} = 2\arcsin\sqrt{P}, \text{ with a variance of } \frac{1}{n}$$

For studies in which there were no recidivists for certain types of offenses, we estimated the recidivism rate (*p*) performing Bartlett's adjustment, that is, $1/4n$ (Eisenhart, 1947, sec. 4.3; Cohen, 1988, p. 183).

We coded for 9 types of recidivism: **Any Sexual Recidivism.** This category included any subsequent offenses of a sexual nature, regardless of contact status. Examples included rape, incest, child sexual exploitation material (CSEM), and voyeurism. **Contact Sexual Recidivism.** This subset referred specifically to sexual reoffending involving physical contact with a victim. Examples included sexual assault and rape. **CSEM Recidivism.** This category encompassed offenses involving child sexual exploitation material. **Any Non-Contact Sexual Recidivism.** This broader category included all non-contact sexual offenses, including both CSEM offenses and non-CSEM offenses such as voyeurism or online sexual solicitation. **Non-Sexual Violent Recidivism.** This category included reoffending involving non-sexual acts of violence. Examples were robbery, physical assault, murder, and domestic violence. **Any Violent Recidivism.** This outcome combined non-sexual violent offenses and contact sexual offenses under a single "violent" classification. **Any Crime Recidivism (Major Recidivism).** This category included all types of reoffending excluding administrative breaches (e.g., parole violations), minor infractions, and traffic offenses (with the exception of driving under the influence or criminal negligence). **Any Recidivism.** This broadest category included any reoffending behaviour, often reported in primary studies without specific offense-type differentiation. It included both criminal offenses and administrative violations (e.g., breaches, condition failures). **Breach/Recall.** This category referred to the return of an individual to custody due to violation of release conditions (e.g., parole or probation). For a full description of the recidivism coding, see our coding manual in the https://osf.io/shgax/?view_only=d55f640a9ff2491a8faaf3423172a2c7.

Table 1
List of studies included in the meta-analysis.

Study	Country	Sample timeframe	Sample description	Additional data provided by authors (Y/N)
1. Babchishin et al. (2023)	Canada (British Colombia)	2005–2013	A longitudinal study examining the predictive accuracy of ACUTE-2007 and STABLE-2007 for men with CSEM offenses	Y
2. Beier et al. (2015)	Germany (Berlin)	2005–2011	Pre-post evaluation of a treatment program of self-motivated individuals with pedophilias/hebephilias in the Dunkenfeld project	N
3. Black (2018)	New Zealand	1998–2014	A complete cohort of individuals convicted of CSEM	N
4.1. Cohen and Spidell (2016) 4.2 Cohen (2023) 4.3 Cohen (2018)	US (Fed.)	2007–2013	Recidivism rates of individuals on post-conviction supervision	Y
5. Dowling et al. (2021)	Australia	1994–2018	A complete cohort of individuals convicted of sexual offenses	Y
6.1 Eke et al. (2019) Development 6.2 Seto and Eke (2005) 6.3 Seto and Eke (2008)	Canada (Ontario)	1993–2018	A development sample of CPORT among individuals convicted of CSEM offenses	Y
7.1 Eke et al. (2024) Validation 7.2 Babchishin, Lee, et al. (2022) 7.3 Eke et al. (2019) 7.4 Eke and Seto (2023) 7.5 Helmus et al. (2024) 7.6 Seto and Eke (2015)	Canada (Ontario)	2006–2018	A validation sample of CPORT and Risk Matrix among individuals convicted of CSEM offenses	Y
8.1 Endrass et al. (2009) 8.2 Endrass and Rossegger (2010)	Switzerland	2002–2008	A sample of individuals charged with CSEM offenses as a result of a police investigation	Y
9 Emeagi et al. (2024)	UK	2018–2020	Nationwide probation community caseload including men with sexual offenses	Y
10.1 Faust et al. (2015) 10.2 Faust et al. (2009)	US (Fed.)	2002–2005	A complete cohort of individuals with CSEM or contact offenses released from custody	Y
11. Franqué et al. (2023)	Germany (Göttingen)	2012–2021	Self-referred individuals with CSEM offenses in a voluntary treatment program conducted between 2012 and 2021	N
12 Ghossoub and Khoury (2020)	U.S. (Prov.)	?–2018	Adults with first-time offenses convicted by 2018	Y
13.1 Goller et al. (2016) 13.2 Goller et al. (2010)	Switzerland	1973–2008	A complete cohort study of individuals convicted of CSEM offenses between 1973 and 2008	
14.1 Henshaw (2017) 14.2 Henshaw et al. (2018)	Australia	2004–2014	A complete cohort study of individuals convicted of CSEM and CSA offenses	N
15.1 Howard et al. (2014) 15.2 Wakeling et al. (2011) 15.3 Webb et al. (2007) 15.4 Howard et al. (2015) 15.5 Barnett et al. (2010) 15.6 Elliott et al. (2019) 15.7 Howard (2009) 15.8 Osborn et al. (2010)	UK	2002–2009	A complete cohort study of individuals convicted of sexual offenses	Y
16. Howell (2018)	New Zealand	1994–2016	Individuals in a treatment program convicted of CSEM offenses	N
17. Jung et al. (2013)	Canada (Alberta)	2001–2009	A sample of males convicted of sexual offenses referred/court ordered of risk	Y
18. Krone and Smith (2017)	Australia	2005–2011	A complete cohort of individuals with CSEM offenses identified and convicted via police investigations	N
19. Laajasalo et al. (2020)	Finland	2005–2017	Longitudinal study of individuals with child sex offenses convicted of CSEM and CSA	N
20. Latimer (2003)	Canada (Fed.)	1998–1999	A government report where the data was collected from the Adult Criminal Survey on individuals convicted of CSEM	N
21. Paquette et al. (2025)	Canada (Quebec)	1994–2021	A complete cohort of men convicted of CSEM offenses	Y
22. Pilon (2016)	Canada (Ontario)	2010–2011	A complete cohort of individuals convicted of CSEM offenses who are returned to custody or community supervision following their release from custody	N
23. Savoie et al. (2022)	UK (Scotland)	2010–2013	CPORT validation study of men convicted of CSEM offenses	N
24. Schuhmann et al. (2016)	Germany	2008–2013	Anonymized data of individuals convicted of CSEM offenses	N
25.1 Soldino et al. (2019) 25.2 Soldino et al. (2021)	Spain	2009–2013	A complete cohort of individuals convicted of CSEM offenses	Y
26. Steel et al. (2021)	US (Texas and Illinois)	2010–2020	Anonymous survey conducted with individuals convicted of CSEM offenses within the past 10 years	Y
27.1 U.S. Sentencing Commission (2012) 27.2 U.S. Sentencing Commission (2021)	US (Fed.)	1998–2019	National FBI data on individuals with CSEM offenses	Y

(*continued on next page*)

Table 1 (*continued*)

Study	Country	Sample timeframe	Sample description	Additional data provided by authors (Y/N)
28. Wijk and Esseveldt (2021)	Netherlands	2012–2018	A longitudinal study of individuals convicted of CSEM offenses	N
29. Wild et al. (2020)	Germany (Bamberg and Hamburg)	2011–2019	Self-referred individuals with CSEM offenses in a treatment program	Y
30. Wollert et al. (2009)	US (Fed)	?–2009	Individuals in an outpatient clinic convicted of CSEM offenses	N

Note. CSEM = overall group of individuals with Child Sexual Exploitation Material (CSEM) offenses, CSEM-E = individuals with CSEM offenses but without any contact sexual offenses, Mixed = individuals with both CSEM and contact sexual offenses.
Overlapping studies (i.e., decimals) are ranked based on the number of effect sizes contributed, from most to least. Cohen confirmed overlap among their studies. Endrass confirmed overlap among their studies. Faust confirmed overlap among their studies. Elliott and Howard confirmed overlap between the UK studies (i.e., Barnett et al., 2010; Elliott et al., 2019; Howard, 2009; Howard et al., 2014, 2015; Osborn et al., 2010; Wakeling et al., 2011 and Webb et al., 2007). Howard confirmed no overlap with Emeagi et al. (2024) and the UK studies (i.e., Barnett et al., 2010, Elliott et al., 2019, Howard, 2009, Howard et al., 2014, 2015, Osborn et al., 2010, Wakeling et al., 2011 and Webb et al., 2007). Soldino confirmed overlap among their studies. U.S. Sentencing Commission confirmed no overlap with the Cohen sample. Wild confirmed no overlap with Beier et al. (2015). Regarding the Ontario sample, we found 9 studies comprising Ontario police files and data from the Sex Offender Registry (SOR). To ensure completeness and non-overlap, we prioritized Ontario police files and requested output from Angela Eke that (a) used the latest data and (b) separate the data based on the development and validation sample of men with both contact and CSEM offenses (Mixed) and men whose sexual offense histories solely comprised of CSEM offense (CSEM-Exclusive). We did not include the Ontario SOR data (Eke et al., 2011) given sample overlap nor the subgroup of men with noncontact and CSEM offenses in the Ontario sample.

2.3.2. Meta-analysis

We used both fixed-effect and random-effects models to determine the size and consistency of the proportions (Hedges & Vevea, 1998). Both approaches pose slightly different questions (Whitehead, 2002, sec. 6.3). A fixed-effect model assumes that the parameters being studied remain constant for all individuals or groups in the study sample – that is, all the included studies share a common effect size, μ. A random-effects model, on the other hand, allows for the possibility that the parameters of interest may vary across individuals or groups. This means that the variability in the data is due to both random error and systematic differences between individuals or groups. As a result, the aggregated effect does not reflect a single shared effect, but rather indicates the mean of the population of true effects (Borenstein et al., 2009).

We used the Q statistic to examine the generalizability of fixed effects across studies (p_i: the observed proportion in each of k studies; $p_.$: the weighted average):

$$Q = \sum_{i=1}^{k} w_i (p_i - p_.)^2$$

Overlapping samples were carefully addressed to avoid violating the assumption of independence across effect sizes, which could bias results and inflate precision estimates in the meta-analysis. The procedure for handling overlapping samples is detailed in the coding manual (see https://osf.io/shgax/?view_only=d55f640a9ff2491a8faaf3423172a2c7). Briefly, when multiple studies reported on the same sample, the study contributing the most effect sizes was designated as the primary source. When overlapping studies focused on different recidivism types (e.g., sexual vs. non-sexual violent), effect sizes were coded for each different outcome type. In cases where multiple studies based on the same sample reported on the same outcome, the study with the longest follow-up period was selected, unless it resulted in excessive attrition (i.e., more than 40 % of participants lost to follow-up).

2.3.3. Outliers

If the Q statistic showed significant results, additional analysis of the data was completed to determine whether an outlier could be identified. An observation was deemed an outlier if: (a) it represents an extreme value (either the highest or the lowest), (b) the Q statistic yielded significant results, and (c) the observation contributed to more than 50 % of the value of the Q statistic. We presented the results both with and without outliers.

2.3.4. Exceptionally large samples

Meta-analyses can be significantly impacted by exceptionally large sample sizes, especially in moderator analyses where the number of studies included (k) decreases (Babchishin & Helmus, 2013). We examined the weights rather than the sample size to determine if a study weight was abnormally high. If that was the case, and the variability (Q) was significant (non-significant Q suggests that a large study is less likely to distort the findings), we adjusted the study's weight. We used the guideline proposed by Babchishin and Helmus (2013), which states that the highest study weight should not exceed 50 % more than the next highest study weight. For example, if there was a very large study (e.g., N > 100,000) with a weight of 500, and the next biggest study weight was 100 and the variability (Q) was also statistically significant, we reduced this study's weight from 500 to 150, so it became 50 % larger than the study weight of 100. In Q-between analyses, we excluded the outliers rather than modifying the study weights and presented the results with full and reduced models.

2.3.5. Moderation analyses

Moderation analyses are typically performed when there is a significant Q, indicating more variability than expected by chance. However, moderator analyses can still be conducted even if the Q statistic is not significant, as long as the I^2 statistic—an indicator of how much of the observed variance reflects true effect differences rather than sampling error (Borenstein, 2022)—suggests meaningful variability (Babchishin & Helmus, 2013). For this study, we were interested in two sets of moderator analyses: one examining the influence of categorical moderators (i.e., subgroup, country, publication status, and sources of information) and one examining the influence of a continuous moderator (i.e., average age of the sample, criminal history, length of follow-up, study year).

For categorical moderators, we conducted fixed-effect Q-between analyses that provide a powerful test of differences between groups ($p \leq .05$; Cumming & Finch, 2005). The Q-between statistic is derived by performing a meta-analysis across various studies that involve a specific moderator. This involves calculating the variance within each category of the moderator and then deducting the Q-value for each category from the overall total (Borenstein et al., 2009). The value is then assessed against the chi-square distribution with k - 1 degrees of freedom. If the Q statistic for between-level differences turns out to be significant, it implies that the moderator significantly influences the variance observed in the outcome variable across the different studies. We used a fixed-effect regression analysis to examine the influence of the continuous moderator using the following steps: first, we ran the meta-analysis with all relevant studies in *R* Studio, second, we conducted a linear regression analysis with (a) effect size as dependent variable, (b) weight variable as a WLS weight variable, (c) the moderator as the independent variable

(Babchishin & Helmus, 2013), and (d) the *Z* value to determine statistical significance.

3. Results

Table 2 presents samples that reported any sexual, CSEM, and any recidivism rates based on official and self-reported sources for samples of individuals with any CSEM offenses, as well as the subgroups of individuals with CSEM-Exclusive and Mixed offending. Meta-analysis of official recidivism rates among individuals with any CSEM offenses ranged from 0.47 % (Fixed-effect$_{\text{non-contact sex}}$) to 17.20 % (Fixed-effect$_{\text{breach/recall with outlier removed}}$; see Fig. 2; see Figs. s1 and s2 for forest plots showing contact and CSEM recidivism rates, respectively). The fixed-effect estimate for any official sexual recidivism was 5.93 % (95 % CI = [5.60, 6.27], $k = 21$) after an average of 4.72 years follow-up for individuals with any CSEM offenses (see Fig. s3). Heterogeneity was significant among all official recidivism types, except for non-contact sex recidivism for individuals with any CSEM offenses (see Table 3). Compared to the Seto et al. (2011) meta-analysis, recidivism rates were higher across recidivism outcomes: any sex recidivism was 5.9 % compared to 2.8 %, contact offenses were 1.5 % vs. 0.7 %, CSEM offenses were 4.1 % vs. 2.1 %, and violent (including contact sexual) offenses were 5.9 % vs. 2.0 % to 5.9 % (see Appendix A for list of studies included in Seto et al., 2011 compared to the current meta-analysis).

3.1. Subgroup analyses

All *Q*-between analyses showed significant differences in official sexual recidivism outcomes between the CSEM-Exclusive group and the Mixed group, with the Mixed group reoffending at higher rates than the CSEM-Exclusive group. For example, CSEM-Exclusive group had much lower rates of contact sex recidivism based on official sources (0.56 %) after an average of 4.70 years ($SD = 0.21$), compared to the Mixed group at 8.80 % after an average of 5.08 years ($SD = 0.06$); see Table 4 and Figs. s4 and s5. The CSEM-Exclusive group also had much lower rates of CSEM recidivism (3.14 %) than the Mixed group (8.76 %). Overall, any sexual recidivism rate for the Mixed group was about 3 times more than CSEM-Exclusive group (22.22 % vs. 7.82 %; OR = 3.36).

Significant differences were also observed in other types of official recidivism: any violent (including contact sexual) recidivism (outlier removed model; $Q_\Delta = 17.40$, $p < .001$, $df = 1$), breach/recall ($Q_\Delta = 62.55$, $p < .001$, $df = 1$), any recidivism ($Q_\Delta = 117.17$, $p < .001$, $df = 1$), and any crime ($Q_\Delta = 4.79$, $p = .029$, $df = 1$). However, the type of subgroup had no significant effect on nonsexual violent official recidivism rates ($Q_\Delta = 1.31$, $p = .252$, $df = 1$; see Table s6 of the online supplements for any violent and nonsexual recidivism rates per subgroups).

Moderator Analyses

3.1.1. Categorical outcomes

Table 5 shows the results of the moderator analyses on any sex recidivism rates for individuals with any CSEM offenses. Studies from United States, published studies, studies that used national sources of data, and studies that relied on official recidivism records were associated with lower recidivism rates. Arrests had the lowest recidivism rate at 4.52 %, followed by convictions at 5.99 %, and charges at 9.35 % (see Fig. s6). The type of follow-up used in the study – 5-year fixed or variable– did not significantly influence the any sex recidivism outcome, likely because the variable average follow-up was 4.72 years ($SD = 2.30$, $k = 14$). Regardless, we provided separate results for fixed 5-year versus variable follow-up types for any sex, contact sex, and CSEM recidivism in the Any CSEM (Table s7), CSEM-Exclusive (Table s8), and Mixed (Table s9) groups.

3.1.2. Fixed-effect meta-regression

Table 6 shows the results from the fixed-effect meta-regression analyses looking at the influence of continuous moderators on any sexual recidivism based on official recidivism sources for individuals with any CSEM offenses. Higher recidivism rates were associated with older average sample age, more extensive prior criminal histories, longer follow-up periods, and more recent study years (see also Figs. s7 and s8).

4. Discussion

Understanding the recidivism rates of individuals convicted of child sexual exploitation material (CSEM) offenses is critical for evidence-based risk assessment, treatment planning, and public policy. This study is the largest meta-analysis to date on recidivism rates of CSEM offending individuals, with over twice as many studies and a total sample size that was seven times larger than the previous meta-analysis by Seto et al. (2011). The larger number of studies allowed us to separate CSEM-Exclusive group from the Mixed group. Overall, CSEM-offending individuals had a 5.9 % sexual recidivism rate, 1.5 % contact sexual recidivism, 4.1 % CSEM recidivism, and a 12.0 % any recidivism rate over an average follow-up of 4.7 years, based on official sources. The Mixed group showed higher recidivism rates for most outcomes compared to the CSEM-Exclusive group. In particular, we found that individuals who commit both contact and CSEM offenses are approximately 15 times more likely to reoffend with contact sexual offenses compared to CSEM-Exclusive individuals (8.8 % vs. 0.6 %), demonstrating this is a relatively higher risk group and thus a higher priority for policy and practice decisions.

Self-reported data indicated CSEM recidivism rates were about nine times higher than official records (38.3 % vs. 4.1 %), suggesting many new CSEM offenses go undetected. Although we did not have sufficient studies to meta-analyze self-reported contact sexual recidivism, the two studies with self-report contact sexual reoffending (3.8 % in Franqué et al., 2023; 0.0 % in Wild et al., 2020) found a similar and low rate to official sources after approximately 2.5 years for both studies. This aligns with findings by Neutze et al. (2011) that CSEM offenses are less frequently detected by the criminal justice system than contact sexual offenses, possibly because online offenses are more difficult to detect when countermeasures are used (e.g., anonymous accounts, encrypted messaging, use of darknet) and when there are no direct victims (or witnesses) coming forward to report offenses by an identifiable suspect. The gap between self-reported and official recidivism rates aligns with Seto et al. (2011), who found that self-reported histories of contact sexual offending were substantially higher than what was reflected in official records. Specifically, while about 1 in 2 individuals with CSEM offenses self-reported a contact sexual offense, only 1 in 8 had an official record of such an offense (Seto et al., 2011).

We found higher recidivism rates across different outcomes compared to the Seto et al. (2011) meta-analysis, which may be partially attributed to the establishment of specialized police units investigating CSEM cases, making detection and reporting easier (Government of Canada, 2019). Higher recidivism rates in more recent studies may also reflect a selection effect, where higher-risk individuals are seen in clinical, forensic, and correctional settings, reflecting recommendations to prioritize higher-risk CSEM cases (Seto, 2013, 2025). For example, given that the number of CSEM cases exceeds investigation capacity, police investigators may prioritize higher-risk individuals, such as those with a criminal history, which then leads to prosecution and referral decisions. Of course, the average follow-up years also increased (from 3.3 years in Seto et al., 2011 to 4.7 years in the current meta-analysis), and we found longer follow-up periods predicted higher recidivism rates.

Samples with higher histories of any, sex, and violent prior offenses had higher sexual recidivism rates, supporting research that criminal history is a robust risk factor for sexual recidivism among men who commit CSEM offenses (Eke et al., 2018). Indeed, any criminal history and contact sexual offending history are two of the 7 items on the Child

Table 2
List of recidivism studies with any sexual, CSEM, and any recidivism rates for samples.

Study	Sample	Largest N	Recidivism criteria	Mean follow-up (months)	Follow-up type (F/Var/F + Var)	Any sexual recidivism % (*n*/*N*)	CSEM recidivism % (*n*/*N*)	Any recidivism % (*n*/*N*)
1 Babchishin et al. (2023)	Any CSEM	297	Charges	36.0	F	5.4 (16/297)	3.7 (11/297)	17.2 (51/297)
	CSEM-E	222				4.1 (9/222)	3.6 (8/222)	11.7 (26/222)
	Mixed	75				9.3 (7/75)	4.0 (3/75)	33.3 (35/75)
2 Beier et al. (2015)	Any CSEM	49	Self-reports	12.0	F		85.7[a] (42/49), 0.0[b] (0/49)	
	CSEM-E	21						
	Mixed	28						
3 Black (2018)	Any CSEM	547	Convictions	91.0	Var		13.0 (71/548)	23.8 (130/547)
4.1 Cohen and Spidell (2016)	Any CSEM	2287	Arrests	36.0	F	–		13.0 (297/2287)
	CSEM-E	1722				2.2 (38/1722)		12.5 (215/1722)
	Mixed	565				–		14.7 (83/565)
4.2 Cohen (2023)	Any CSEM	5768	Arrests	60.0	F	4.5 (260/5768)		
	Mixed	5768				1.5 (130/5768)		
4.3 Cohen (2018)	Any CSEM	3487	Arrests, breaches or risky behaviors reported by parole	28.2	Var	2.0 (70/3487)		
5 Dowling et al. (2021)	Any CSEM	230	Charges	60.0 (F), 120.0 (F), 98.9 (Var)	F + Var	7.8[c] (18/230)		
	CSEM-E	195				7.7[c] (15/195)		
	Mixed	35				8.6[c] (3/35)		
6.1 Eke et al. (2019)	Any CSEM	180	Charges	60.0 (F), 101.5 (Var)	F + Var	16.7 (30/180)	7.8 (14/180)	25.0 (45/180)
Development	CSEM-E	132				6.1 (8/132)	4.5 (6/132)	17.4 (23/132)
	Mixed	48				45.8 (22/48)	16.7 (8/48)	45.8 (22/48)
6.2 Seto and Eke (2005)								
6.3 Seto and Eke (2008)								
7.1 Eke et al. (2024)	Any CSEM	52	Charges	60.0	F + Var	15.4 (8/52)	11.5 (6/52)	30.8 (16/52)
Validation	CSEM-E	33				6.1 (2/33)	6.1 (2/33)	21.2 (7/33)
	Mixed	19				31.6 (6/19)	21.1 (4/19)	47.4 (9/19)
7.2 Babchishin, Lee, et al. (2022)								
7.3 Eke et al. (2019)								
7.4 Eke and Seto (2023)								
7.5 Helmus et al. (2024)								
7.6 Seto and Eke (2015)								
8.1 Endrass et al. (2009)	Any CSEM	231	Investigations, charges, convictions	72.0	F		3.9 (9/231)[d], 2.6 (6/231)[e]	6.1[d] (14/231), 3.0[e] (7/231)
8.2 Endrass and Rossegger (2010)								
9 Emeagi et al. (2024)	Any CSEM	3827	Convictions	24	F	10.1 (388/3827)	3.7 (140/3827)	12.1 (462/3827)
	CSEM-E	3827				10.1 (388/3827)	3.7 (140/3827)	12.1 (462/3827)
10.1 Faust et al. (2015)	Any CSEM	428	Arrests	57.6	Var		1.6 (7/428)	
	CSEM-E	428					1.6 (7/428)	
10.2 Faust et al. (2009)	Any CSEM	870	Convictions	45.6	Var	5.7 (50/870)		25.4 (221/870)
11 Franqué et al. (2023)	Any CSEM	132	Self-reports	30.0	Var		39.4 (52/132)	

(*continued on next page*)

Table 2 (*continued*)

Study	Sample	Largest N	Recidivism criteria	Mean follow-up (months)	Follow-up type (F/ Var/F + Var)	Any sexual recidivism % (*n*/*N*)	CSEM recidivism % (*n*/*N*)	Any recidivism % (*n*/*N*)
	CSEM-E	90					37.8 (34/90)	
	Mixed	42					42.9 (18/42)	
12 Ghossoub and Khoury (2020)	Any CSEM	33	Convictions	48.0	F	9.1 (3/33)		
	CSEM-E	28				0.0 (0/28)		
	Mixed	5				20.0 (1/5)		
13.1 Goller et al. (2016)	Any CSEM	3422	Convictions	36.0, 60.0, 120.0	F		2.2[f] (74/3422)	7.5[f] (256/3422)
	CSEM-E	3125					2.0[f] (62/3125)	7.4[f] (230/3125)
	Mixed	297					4.0[f] (12/297)	8.8[f] (26/297)
13.2 Goller et al. (2010)								
14.1 Henshaw (2017)	Any CSEM	483	Charges	70.2	Var	26.9 (130/ 483)	22.6 (109/483)	60.9 (294/483)
	Mixed	161				46.0 (74/ 161)	25.5 (41/161)	69.6 (112/161)
15.1 Howard et al. (2014)	Any CSEM	1301	Convictions	37.3	Var	4.5 (59/ 1301)	4.1 (53/1301)	9.6 (125/1301)
	CSEM-E	1230				4.5 (55/ 1230)	4.1 (50/1230)	9.8 (120/1230)
	Mixed	71				5.6 (4/71)	4.2 (3/71)	7.0 (5/71)
15.2 Wakeling et al. (2011)	Any CSEM	994	Convictions	24.0	F	3.1 (31/994)	2.5 (25/994)	
	CSEM-E	690				1.6 (11/690)	1.6 (11/690)	
	Mixed	304				6.6 (20/304)	4.6 (14/304)	
15.3 Webb et al. (2007)	Any CSEM	73	Arrests, breaches or risky behaviors reported by parole	18.0	Var	2.7[b] (2/73), 17.8[g] (13/ 73)		
15.4 Howard et al. (2015)	Any CSEM	1248	Convictions	48	F	4.1 (51/ 1248)		
15.5 Barnett et al. (2010)								
15.6 Elliott et al. (2019)								
15.7 Howard (2009)								
15.8 Osborn et al. (2010)								
16 Howell (2018)	Any CSEM	59	Convictions	36.0	F			28.8 (17/59)
	CSEM-E	29						27.6 (8/29)
	Mixed	30						30.0 (9/30)
17 Jung et al. (2013)	Any CSEM	45	Convictions	13.5	Var	8.9 (4/45)	8.9 (4/45)	11.1 (5/45)
	CSEM-E	45				8.9 (4/45)	8.9 (4/45)	11.1 (5/45)
18 Krone and Smith (2017)	Any CSEM	148	Convictions	41.0	Var	6.8 (10/148)	4.7 (7/148)	6.8 (10/148)
	CSEM-E	131						
	Mixed	8						
19 Laajasalo et al. (2020)	Any	61	Convictions	84.0	F	0.0 (0/61)		8.2 (5/61)
	CSEM			84.0	F	0.0 (0/61)		8.2 (5/61)
20 Latimer (2003)	Any CSEM	816	Convictions	60.0	F	4.0 (33/816)	3.1 (25/816)	28.9 (235/816)
21 Paquette et al. (2025)	Any CSEM	136	Convictions	61.1 (Any), 61.4 (CSEM-E), 59.6 (M)	Var	6.6 (9/136)	5.9 (8/136)	24.3 (33/136)
	CSEM-E	104				6.7 (7/104)	6.7 (7/104)	23.1 (24/104)
	Mixed	32				6.3 (2/32)	3.1 (1/32)	28.1 (9/32)
22 Pilon (2016)	Any CSEM	279	Convictions	38.68	Var	2.9 (9/279)	2.5 (7/279)	9.0 (25/279)
	CSEM-E	279				2.9 (9/279)	2.5 (7/279)	9.0 (25/279)
23 Savoie et al. (2022)	Any CSEM	140	Convictions, breaches or risky behaviors reported by parole	60.0	F	10.0 (14/ 140)	7.8 (14/141)	24.8 (35/141)
	CSEM-E	122				7.4 (9/122)	6.6 (8/122)	22.1 (27/122)

(*continued on next page*)

Table 2 (*continued*)

Study	Sample	Largest N	Recidivism criteria	Mean follow-up (months)	Follow-up type (F/ Var/F + Var)	Any sexual recidivism % (*n*/*N*)	CSEM recidivism % (*n*/*N*)	Any recidivism % (*n*/*N*)
	Mixed	19				26.3 (5/19)	15.8 (3/19)	42.1 (8/19)
24 Schuhmann et al. (2016)	Any CSEM	2792	Convictions	33.0	Var	3.2 (90/ 2792)	79.1 (72/91)	1.1 (30/2792)
25.1 Soldino et al. (2021)	CSEM-E	255	Arrests	60.0 (F), 82.8 (Var)	F + Var	2.0 (5/255)		
25.2 Soldino et al. (2019)	Any CSEM	347	Arrests	78.0	Var	5.5 (19/347)	3.5 (12/347)	9.2 (32/347)
	CSEM-E	329				4.9 (26/329)	3.6 (12/329)	8.5 (28/329)
	Mixed	18				16.7 (3/18)	0.0 (0/18)	22.2 (4/18)
26 Steel et al. (2021)	Any CSEM	77	Anonymous self-reports	69.7	Var		10.3 (8/78)	
27.1 U.S. Sentencing Commission (2012)	Any CSEM	610	Arrests, convictions	102.0	Var	7.4[b] (45/ 610)	1.5[e] (9/610)	
27.2 U.S. Sentencing Commission (2021)	Any CSEM	1093	Arrests	36.0	F	4.3 (47/ 1093)		27.6 (302/1093)
28 Wijk and Esseveldt (2021)	Any CSEM	194	Breaches or risky behaviors reported by parole	57.0	Var	12.9 (25/ 194)		21.6 (42/194)
29 Wild et al. (2020)	Any CSEM	6	Self-reports	12.0 (F), 28.8 (Var)	F + Var		16.7 (1/6)	
	CSEM-E	4					25.0 (1/4)	
	Mixed	2					0.0 (0/2)	
30 Wollert et al. (2009)	Any CSEM	72	Arrests	48.0	Var		1.4 (1/72)	6.9 (5/72)
	CSEM-E	59						
	Mixed	13						

Note. CSEM = overall group of individuals with Child Sexual Exploitation Material (CSEM) offenses; CSEM-E = individuals with CSEM offenses but without any contact sexual offenses; Mixed = individuals with both CSEM and contact sexual offenses.
F = Fixed follow-up; Var = Variable follow-up. Empty cells show we either did not record the rate from that study or the study did not report rates for that outcome. When there are both fixed and variable follow-up reported, fixed follow-up is used to report the rates.

[a] Self-reports.
[b] Arrests.
[c] 60-months fixed.
[d] Investigations.
[e] Convictions.
[f] 36-months.
[g] Breaches or risky behaviors reported by community supervision officers or staff.

Pornography Offender Risk Tool, a risk assessment tool developed for men who commit CSEM offenses (Seto & Eke, 2015).

U.S. studies reported the lowest recidivism rates, likely due to varying data quality and the use of inconsistent state-level data in the U.S. compared to standardized national databases such as those available in Canada and Europe. The lower accuracy of recidivism information in the U.S. is not new. Hanson et al. (2015) excluded U.S. studies from their sample due to difficulties in obtaining reliable recidivism information. The Council of State Governments' Justice Center Report (2024) highlighted variations in U.S. recidivism rates due to differing definitions and methods, and the National Academies Press Report (2022) noted the inconsistency of state-level data compared to Europe's standardized databases. This variability highlights the need for standardized definitions and data sources to improve the accuracy and comparability of recidivism rates globally.

4.1. Implications

This meta-analysis of 30 non-overlapping samples representing 25,978 men with CSEM offenses found that about two-thirds of those charged with CSEM offenses fall into the CSEM-Exclusive category, meaning they restrict their sexual crimes to CSEM offenses. The Mixed group, who also commit contact sexual offenses, reoffended more than the CSEM-Exclusive group and therefore should be prioritized for more intensive monitoring and intervention. This meta-analysis did not include a comparison of men with exclusively contact sexual offenses, but drawing from empirical work, the sexual recidivism rate of Mixed individuals (22 % after approximately five years) and contact sexual recidivism rate of Mixed individuals (8.8 % after approximately five years) are higher than projected five-year sexual recidivism rates (3.2 % to 6.5 %) observed in typical sexual offending cohorts scoring average-risk on validated risk tools (Helmus et al., 2021).

The elevated sexual recidivism rates for the Mixed subgroup may be attributed to their dual engagement in both CSEM and contact offending, which suggests the presence of both atypical sexual interest and the capacity to act on their interest in multiple ways. Indeed, a meta-analysis found that men with Mixed offenses score higher on measures of sexual interest in children, cognitive distortions, and general empathy deficits compared to contact sexual offending individuals (Babchishin et al., 2015). Mixed individuals exhibit higher levels of sexual interest in children compared to CSEM-exclusive individuals (Babchishin et al., 2015). Mixed individuals show evidence of sexual interest in two ways: accessing CSEM and engaging in sexual contacts with children. In short, the dual offending pattern among Mixed individuals may reflect a

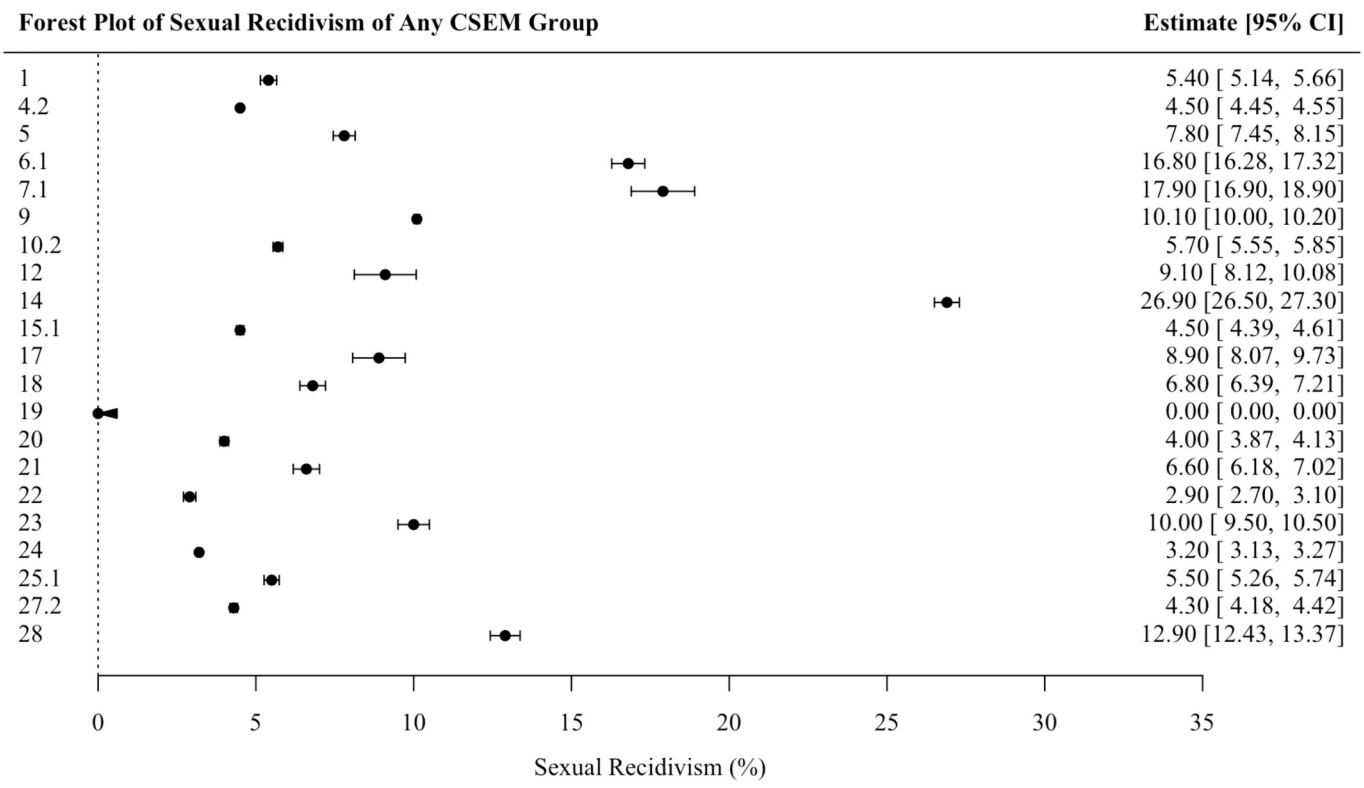

Fig. 2. Forest plot showing any sexual recidivism rates among the overall any CSEM group. Y-axis provides the Study ID.

broader and more entrenched pattern of sexual criminality and criminal versatility.

It is thus imperative that the existence of prior or concurrent contact sexual offenses be ascertained to inform management and triaging of individuals with CSEM offenses. Sentencing, treatment, and supervision decisions can subsequently be informed by validated risk assessments, such as the STABLE-2007 (Babchishin et al., 2023) or the Child Pornography Offender Risk Tool (Seto & Eke, 2015), to better identify the minority of CSEM-Exclusive individuals who will sexually reoffend (Helmus et al., 2025). Strategies such as regular check-ins and digital surveillance may be warranted to ensure that potential escalation to contact offenses is detected and disrupted early; validated risk tools, however, should inform these decisions (Bonta & Andrews, 2023).

Tools such as the Kent Internet Risk Assessment Tool– Version 2 (KIRAT–2) assist law enforcement in prioritizing which individuals suspected of CSEM offenses are most likely to have committed contact sexual offenses (Long et al., 2016). KIRAT-2 is a structured decision-making tool that uses case-specific information, such as offender demographics, offense characteristics, and possession patterns, to estimate the likelihood of contact offending. Importantly, KIRAT-2 can only be applied once the individual has been identified, meaning it is used after a suspect is already under investigation. While KIRAT-2 has shown utility in operational settings, it relies on comprehensive case data and an identifiable suspect, which may limit its feasibility in investigations where information is just emerging, incomplete or inconsistently recorded. As such, there is still a need for other tools to assist law enforcement to help identify and prioritize likely Mixed cases. Linguistic analyses of computers of CSEM individuals may be a helpful approach to detect Mixed individuals, as they have been shown to identify different offending typologies and predict recidivism (Drouin et al., 2017, 2018). Law enforcement can identify Mixed offending by searching for CSEM offending history during child sexual abuse (CSA) investigations, which would also be consistent with Seto and Eke (2024), who found that CSEM cases differed in their sexual recidivism rates based on how they were detected, with those detected during other police investigations being higher risk than those detected through undercover police operations. Even if CSA typically carries harsher penalties than CSEM offenses (International Justice Mission, 2020), it is important to document CSEM offenses given Mixed offending is a critical factor in assessing risk and guiding intervention. While pro-active law enforcement approaches successfully capture individuals with CSEM offenses, it is not an efficient strategy for identifying higher-risk CSEM individuals.

Our meta-analysis does not support the gateway hypothesis' (Steiker, 2013) applicability to CSEM offending. Our official data suggests low rates of crossover: 1.5 % for the Any CSEM group and 0.6 % among the CSEM-Exclusive subgroup, providing evidence against the gateway hypothesis. The official rates of contact sexual recidivism among the Mixed group are much higher (8.8 %) and are higher than typical cohorts of sexual offending individuals scoring average risk on a validated risk tool (3.2 % to 6.5 % projected 5-year sexual recidivism rate in Helmus et al., 2021). Tools such as STABLE-2007 (Brankley et al., 2021) and CPORT (; Eke et al., 2024; Seto & Eke, 2015) are critical for identifying individuals at higher risk of crossing over, thereby potentially preventing further offenses. These tools are valid for men with CSEM offenses (see Helmus et al., 2025, for review).

4.2. *Limitations and future directions*

The inherent variability across studies and definitions poses limitations. Of the 21 unique CSEM-Exclusive samples (including self-reports), some (38.1 %, $k = 8$) included those with both CSEM and non-contact offenses in this category, while others (23.8 %, $k = 5$) strictly considered those with exclusively CSEM offenses as part of their sexual offending, and a significant number of samples (38.1 %, $k = 8$) did not report a clear definition of their grouping (see Table s10).

Setting is another factor that can influence recidivism rates, with specialized settings having higher recidivism rates than cohort-based studies (Hanson et al., 2016). These discrepancies make it challenging to capture a consistent picture of reoffending rates. With fewer than 30 studies, random effects meta-analyses might not be robust (Schmidt

Table 3
Meta-analysis of recidivism rates for individuals with any CSEM offenses based on official recidivism sources.

Recidivism outcome	Fixed-effect % [95 % CI]	Random-effects % [95 % CI]	Q	I^2	n (k)	Studies
Any sex	5.93 [5.60, 6.27]	7.21 [4.99, 9.81]	**426.75**	95.31	19,112 (21)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2, 28
Contact sex	1.53 [1.36, 1.72]	2.20 [1.09, 3.68]	**222.99**	91.48	18,543 (20)	1, 3, 4.2, 5, 6.1, 7.1, 8.1, 9, 13.1, 14, 15.1, 16, 17, 18, 21, 24, 25.1, 27.2, 28, 30
CSEM	4.08 [3.75, 4.42]	6.69 [2.84, 12.01]	**628.12**	96.82	13,522 (21)	1, 2, 3, 6.1, 7.1, 8.1, 9, 10.1, 13.1, 14, 15.1, 17, 18, 20, 21, 22, 23, 24, 25.1, 27.1, 30
Any non-contact sex (including CSEM)	3.62 [3.36, 3.88]	7.76 [3.77, 13.03]	**672.07**	97.02	19,490 (21)	1, 3, 4.2, 6.1, 7.1, 8.1, 9, 13.1, 14, 15.1, 17, 18, 20, 21, 22, 23, 24, 25.1, 27.2, 28, 30
Non-contact sex	0.47 [0.17, 0.90]	0.47 [0.17, 0.90]	0.87	0.00	1346 (2)	15.1, 17
Any violent (including contact)	5.95 [5.51, 6.40]	3.14 [1.10, 6.16]	**241.65**	97.52	10,757 (7)	1, 4.2, 9, 17, 22, 25.1, 28
Nonsexual violent	1.83 [1.63, 2.03]	2.43 [1.17, 4.13]	**192.62**	94.81	17,080 (11)	3, 4.2, 8.1, 9, 10.1, 13.1, 14, 15.1, 17, 20, 24
Breach/recall	7.30 [6.75, 7.87]	12.06 [4.66, 22.28]	**670.84**	98.95	8378 (8)	4.2, 10.1, 14, 15.3, 17, 23, 25.1, 27.2
Breach/recall (*outlier removed*)	17.20 [15.78, 18.68]	13.55 [5.05, 25.31]	**310.83**	98.07	2610 (7)	10.1, 14, 15.3, 17, 23, 25.1, 27.2
Any recidivism	12.01 [11.56, 12.47]	16.96 [11.98, 22.62]	**2006.42**	98.85	19,700 (24)	1, 3, 4.1, 6.1, 7.1, 8.1, 9, 10.2, 13.1, 14, 15.1, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2, 28, 30
Any crime (i.e., major offenses)	9.66 [9.06, 10.27]	9.26 [5.18, 14.38]	**204.67**	97.07	9211 (7)	3, 4.1, 8.1, 9, 10.2, 15.1, 18
Non-sexual	10.07 [9.21, 10.96]	11.73 [5.10, 20.62]	**120.93**	96.69	4523 (5)	5, 19, 24, 25.1, 27.2
Non-sexual non-violent	7.44 [6.80, 8.11]	13.47 [3.66, 28.14]	**569.07**	99.12	6193 (6)	10.1, 13.1, 14, 15.1, 24, 25.1

Note. CSEM = Child Sexual Exploitation Material, k = number of samples. Non-contact sex excludes CSEM offenses, and Any violent recidivism includes contact sex offenses. Non-sexual violent recidivism is defined as crime of violence (e.g., robbery, physical assault, and murder) whereas non-sexual non-violent recidivism is defined as offenses that are not sexual and violent in nature (e.g., theft, financial crimes, and drug offenses). Self-report samples ($k = 4$) were excluded for these meta-analyses. Bolded values are significant at $p < .001$.

et al., 2017), limiting our ability to conduct multivariate moderator analyses.

We had very few ($k = 4$) self-report studies, and so could only meta-analyze CSEM reoffending rates. The Mixed subgroup may also be heterogeneous, with those committing their CSEM before their contact sexual offenses being riskier than those who commit their CSEM offenses after their contact sexual offenses (Babchishin, Lee, et al., 2022). However, we could only examine the Mixed subgroup as an overall group because only one study reported on the temporal ordering of CSEM and contact offenses within their Mixed group (Ontario group: Study #7). This lack of temporal information is a limitation, as understanding offending patterns may improve risk assessment and management. To the extent that the ordering of sexual offenses within Mixed individuals is risk-relevant, our recidivism estimates for the Mixed group may be confounded by combining potential subgroups.

While meta-analyses offer valuable summaries of existing evidence, they are constrained by the completeness and quality of reporting in the primary studies. To address this, we contacted the study authors to obtain missing or unclear information. Additional details were provided for 16 of the 30 samples, allowing us to clarify and supplement key variables. This process enhanced the accuracy and completeness of the data included in the meta-analysis, thereby strengthening the validity of the overall findings. Inadequate reporting of critical factors (e.g., treatment details, pseudo-recidivism,[2] race, and criminal history) hinder accurate recidivism research. Future research should prioritize adherence to the STROBE checklist (STROBE Initiative, 2025), including detailed reporting of measurement methods, definitions, and sample characteristics.

The relatively modest follow-up period (average of 4.7 years) is another limitation of the current meta-analysis. Although this represents an improvement over prior meta-analyses in this area, it does not allow for the estimation of longer-term recidivism rates. Previous studies have consistently shown that the majority of detected sexual recidivism occurs within the first three to five years post-index offense (e.g., Harris & Hanson, 2004), however, supporting the relevance of this timeframe for understanding risk and informing policy. Nonetheless, as longer follow-up studies become available, future meta-analyses will be better positioned to examine long-term recidivism trajectories among individuals with CSEM offenses. For instance, Babchishin et al. (2022) conducted a 20-year follow-up of men convicted of CSEM offenses, identifying distinct offending trajectories. They found that most offenders showed a decline in offending with age. Notably, the study highlighted that early intervention, particularly in youth, could reduce future CSEM offending, suggesting the importance of early detection and risk management strategies for individuals with CSEM offenses.

The findings of this meta-analysis should be interpreted in light of potential cohort effects. Although most samples included in the meta-analysis were collected during the early 2000s, some studies included data from much earlier periods. For example, one sample included CSEM offenses committed between 1973 and 2008. The inclusion of older cohorts may introduce variability related to shifts in detection practices, legal definitions, and access to CSEM over time. These changes are especially relevant in the context of CSEM, as the advent of the internet has substantially altered the nature and accessibility of such material (Seto, 2013, 2025). Social changes such as fluctuations in crime rates, legal responses, and policing practices can differentially impact cohorts, thereby influencing observed recidivism patterns (Neil & Sampson, 2021).

Study year was examined as a proxy for cohort effects and showed a small association with higher recidivism rates in more recent studies.

[2] Pseudo-recidivism refers to cases where historical contact sexual offenses catch up to CSEM offending individuals. While these cases might initially appear as recidivism, it is important to note that the individuals' pre-existing contact sexual offenses occurred prior to their involvement in CSEM.

Table 4
Meta-analysis of recidivism rates of subgroups and their moderation effect on sexual recidivism outcomes based on official recidivism sources.

Sexual recidivism outcome		Fixed-effect % [95 % CI]	Random-effects % [95 % CI]	*Q*	I^2	*n* (*k*)	Studies[a]
Any sex	Any CSEM	4.38 [4.05, 4.72]	9.06 [5.67, 13.14]	**668.66**	96.56	14539 (24)	1a, 1b, 4.1a, 4.2b, 5a, 5b, 6.1a, 6.1b, 7.1a, 7.1b, 9, 12a, 12b, 15.1a, 15.1b, 17, 21a, 21b, 22, 23a, 23b, 25.1a, 25.1b
	CSEM-E	6.38 [5.86, 6.92]	5.69 [3.91, 7.77]	**183.89**	93.47	8272 (13)	1a, 4.1a, 5a, 6.1a, 7.1a, 9, 12a, 15.1a, 17, 21a, 22, 23a, 25.1a
	Mixed	2.30 [1.94, 2.68]	15.29 [7.62, 25.01]	**332.69**	96.99	6267 (11)	1b, 4.2b, 5b, 6.1b, 7.1b, 12b, 15.1b, 21b, 23b, 25.1b
				$Q_\Delta = 152.08$, $p < .001$			
Any sex (*outliers removed; 4.1 and 4.2*)	Any CSEM	8.62 [7.98, 9.29]	10.15 [6.45, 14.56]	**249.00**	91.57	7049 (22)	1a, 1b, 5a, 5b, 6.1a, 6.1b, 7.1a, 7.1b, 9, 12a, 12b, 14, 15.1a, 15.1b, 17, 21a, 21b, 22, 23a, 23b, 25.1a, 25.1b
	CSEM-E	7.82 [7.18, 8.48]	6.21 [4.43, 8.27]	**85.28**	87.10	6550 (12)	1a, 5a, 6.1a, 7.1a, 9, 12a, 15.1a, 17, 21a, 22, 23a, 25.1a
	Mixed	22.22 [18.68, 25.97]	17.92 [9.88, 27.72]	**83.88**	89.27	499 (10)	1b, 5b, 6.1b, 7.1b, 12b, 14, 15.1b, 21b, 23b, 25.1b
				$Q_\Delta = 79.84$, $p < .001$			
Contact sex	Any CSEM	0.87 [0.69, 1.06]	3.30 [1.25, 6.28]	**258.50**	92.26	9871 (21)	1a, 1b, 6.1a, 6.1b, 7.1a, 7.1b, 9, 12, 13.1a, 13.1b, 14, 15.1a, 15.1b, 16a, 16b, 17, 21a, 21b, 23, 25.1a, 25.1b
	CSEM-E	0.56 [0.42, 0.73]	0.62 [0.37, 0.93]	15.83	43.14	9080 (10)	1a, 6.1a, 7.1a, 9, 13.1a, 15.1a, 16a, 17, 21a, 25.1a
	Mixed	8.80 [6.93, 10.87]	8.34 [3.34, 15.32]	**94.07**	89.37	791 (11)	1b, 6.1b, 7.1b, 12, 13.1b, 14, 15.1b, 16b, 21b, 23, 25.1b
				$Q_\Delta = 148.61$, $p < .001$			
CSEM	Any CSEM	3.45 [3.11, 3.80]	5.81 [3.72, 8.33]	**156.68**	87.24	10636 (21)	1a, 1b, 6.1a, 6.1b, 7.1a, 7.1b, 9, 10.1, 13.1a, 13.1b, 14, 15.1a, 15.1b, 17, 21a, 21b, 22, 23a, 23b, 25.1a, 25.1b
	CSEM-E	3.14 [2.80, 3.49]	3.79 [2.79, 4.94]	**44.76**	75.42	9880 (12)	1a, 6.1a, 7.1a, 9, 10.1, 13.1a, 15.1a, 17, 21a, 22, 23a, 25.1a
	Mixed	8.76 [6.85, 10.88]	8.64 [3.42, 15.95]	**69.78**	88.54	756 (9)	1b, 6.1b, 7.1b, 13.1b, 14, 15.1b, 21b, 23b, 25.1b
				$Q_\Delta = 42.14$, $p < .001$			
Any non-contact sex (including CSEM)	Any CSEM	3.55 [3.20, 3.92]	6.17 [3.97, 8.82]	**150.47**	87.37	10208 (20)	1a, 1b, 6.1a, 6.1b, 7.1a, 7.1b, 9, 13.1a, 13.1b, 14, 15.1a, 15.1b, 17, 21a, 21b, 22, 23a, 23b, 25.1a, 25.1b
	CSEM-E	3.23 [2.88, 3.60]	4.08 [3.04, 5.26]	**40.50**	75.31	9452 (11)	1a, 6.1a, 7.1a, 9, 13.1a, 15.1a, 17, 21a, 22, 23a, 25.1a
	Mixed	8.76 [6.85, 10.88]	8.64 [3.42, 15.95]	**69.78**	88.54	756 (9)	1b, 6.1b, 7.1b, 13.1b, 14, 15.1b, 21b, 23b, 25.1b
				$Q_\Delta = 40.19$, $p < .001$			

Note. Analyses restricted to samples that reported recidivism rates for CSEM-Exclusive (denoted by study numbers that include a) and/or Mixed (denoted by b). Therefore, this does not encompass all samples that reported Any CSEM, but rather a subset of them. Self-report samples ($k = 4$) were excluded from the analyses. Any CSEM = overall group of individuals with Child Sexual Exploitation Material (CSEM) offenses, CSEM-E = Child Sexual Exploitation Material-Exclusive (i.e., individuals with CSEM offenses but without any contact sexual offenses), Mixed = individuals with both CSEM and contact sexual offenses, k = number of samples, Q_Δ = *Q*-change. Bolded values are significant at $p < .05$; *p*-values are based on the chi-square distribution with degrees of freedom equal to $k - 1$.

However, this association is confounded by follow-up duration, as more recent studies tended to include longer follow-up periods than earlier studies. We also observed that higher average sample age was associated with increased recidivism rates. However, this relationship is likely confounded by offender type, as Mixed individuals, who generally exhibit higher recidivism rates, also tend to be older than CSEM-Exclusive individuals (Babchishin et al., 2015). Although a multiple meta-regression analysis would have been ideal to disentangle these effects, the number of available samples was insufficient to support such an analysis. Future research should aim to explicitly model cohort effects and examine how broader sociohistorical shifts, including technological, legal, and cultural changes, shape the risk and expression of CSEM-related recidivism. Despite these limitations, it is important to note that most of the included samples were collected between 2000 and 2010.

Despite these limitations, our meta-analysis provides valuable insights into recidivism trends by summarizing findings across multiple studies. Future research should address several gaps in the literature, particularly the involvement of women in CSEM offenses– an underrepresented but important area of study. In our meta-analysis of official recidivism rates, 85 % of samples included exclusively males, 4 % reported mainly (>80 %) men, and 12 % did not report sex or gender of the sample (see Fig. s9). Additionally, more research is needed on youth offending, who represent a substantial portion of CSEM population, yet remain largely unexplored, with only one recidivism study to date (i.e., Aebi et al., 2012). In their sample of 54 youth, Aebi et al. (2012) found 16.7 % any reoffending, 1.9 % violent recidivism, and 1.9 % sexual recidivism rates. This sexual recidivism rate is lower than the average rate found in this meta-analysis, but more youth data are needed for meaningful conclusions. Finally, more research is needed in more jurisdictions; most of our studies were conducted in Europe and North America (specifically, Canada and the United States) and the results may not generalize.

5. Conclusion

Understanding the base rates of recidivism among individuals who commit Child Sexual Exploitation Material (CSEM) offenses carries important implications for policy and practice, particularly regarding resource prioritization. Our meta-analysis – summarizing 30 non-overlapping samples – found that sexual recidivism rates especially for contact sexual offenses, are low among individuals with sexual offense history limited to CSEM offenses. Given the high volume of CSEM cases and the varied risk profiles among individuals with CSEM offenses, law enforcement agencies should focus their resources towards higher-risk individuals. Our findings also prompt a reevaluation of undercover operations, which often target lower-risk individuals (Seto & Eke, 2024) and represents an inefficient use of resources that yield diminishing returns on public safety.

The Risk-Need-Responsivity (RNR) framework (Bonta & Andrews, 2007, 2023) emphasizes tiered responses based on risk levels, indicating that lengthy sentences, mandatory registrations, and intensive supervision/treatment for low-risk individuals may be unwarranted and could inadvertently increase recidivism. This meta-analysis found that CSEM-exclusive individuals have low rates of contact sexual recidivism and that there is considerable variability in recidivism rates. As such, it is

Table 5
Moderator analyses for any CSEM group on any sex recidivism.

Recidivism outcome	Fixed-effect % [95 % CI]	Random-effects% [95 % CI]	*Q*	I^2	*n* (*k*)	Studies
Country	5.93 [5.60, 6.27]	7.21 [4.99, 9.81]	**426.75**	95.31	19112 (21)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2, 28
Canada	5.65 [4.64, 6.76]	7.73 [4.12, 12.35]	**45.87**	86.91	1825 (7)	1, 6.1, 7.1, 17, 20, 21, 22
U.S.	4.62 [4.16, 5.09]	4.62 [4.16, 5.09]	3.60	16.60	7764 (4)	4.2, 10.2, 12, 27.2
Other[a]	7.18 [6.67, 7.71]	7.50 [3.72, 12.45]	**325.58**	97.24	9523 (10)	5, 9, 14, 15.1, 18, 19, 23, 24, 25.1, 28
			$Q_\Delta = 51.70$, $p < .001$			
Country (*outliers removed, 4.2 and 20*)	6.80 [6.37, 7.25]	7.61 [5.13, 10.55]	**380.27**	95.27	12528 (19)	1, 5, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 18, 19, 21, 22, 23, 24, 25.1, 27.2, 28
Canada	7.17 [5.66, 8.85]	8.64 [4.39, 14.13]	**37.08**	86.51	1009 (6)	1, 6.1, 7.1, 17, 21, 22
U.S.	4.96 [4.05, 5.95]	5.05 [3.78, 6.50]	2.91	31.25	1996 (3)	10.2, 12, 27.2
Other[a]	7.18 [6.67, 7.71]	7.50 [3.72, 12.45]	**325.58**	97.24	9523 (10)	5, 9, 14, 15.1, 18, 19, 23, 24, 25.1, 28
			$Q_\Delta = 14.70$, $p < .001$			
Published	5.93 [5.60, 6.27]	7.21 [4.99, 9.81]	**426.75**	95.31	19112 (21)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2, 28
Yes	5.68 [5.34, 6.04]	6.87 [4.76, 9.32]	**238.76**	93.72	17250 (16)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 15.1, 17, 19, 23, 24, 25.1, 27.2, 28
No	8.45 [7.25, 9.78]	8.13 [2.41, 16.80]	**168.01**	97.62	1862 (5)	14, 18, 20, 21, 22
			$Q_\Delta = 19.98$, $p < .001$			
Peer-reviewed	5.93 [5.60, 6.27]	7.21 [4.99, 9.81]	**426.75**	95.31	19112 (21)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2, 28
Yes	6.00 [5.66, 6.35]	7.44 [4.84, 10.54]	**418.63**	95.94	17918 (18)	1, 4.2, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 19, 21, 22, 23, 24, 25.1, 27.2, 28
No	4.97 [3.81, 6.28]	5.75 [3.45, 8.58]	5.82	65.61	1194 (3)	5, 18, 20
			$Q_\Delta = 2.30$, $p = .129$			
Recidivism definition[b]	4.46 [4.12, 4.81]	10.54 [4.72, 18.31]	**948.70**	97.47	13797 (24)	1, 2a, 2b, 3, 6.1, 7.1, 8.1, 9, 10.1, 11, 13.1, 14, 15.1, 17, 18, 20, 21, 22, 23, 24, 25.1, 26, 27.1, 29, 30
Official	4.08 [3.75, 4.42]	6.69 [2.84, 12.01]	**628.12**	96.82	13522 (21)	1, 2a, 3, 6.1, 7.1, 8.1, 9, 10.1, 13.1, 14, 15.1, 17, 18, 20, 21, 22, 23, 24, 25.1, 27.1, 30
Self-report	38.32 [32.67, 44.14]	42.60 [12.41, 76.30]	**88.39**	96.60	275 (4)	2b, 11, 26, 29
			$Q_\Delta = 232.19$, $p < .001$			
Official recidivism source[c]	4.76 [4.41, 5.12]	5.99 [3.58, 8.97]	**253.59**	94.48	13622 (15)	1, 4.2, 5, 12, 14, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 27.2
National source	4.13 [3.77, 4.51]	4.09 [3.32, 4.93]	**23.32**	74.27	11208 (7)	4.2, 15.1, 17, 18, 19, 24, 27.2
Local source	8.19 [7.13, 9.32]	8.18 [4.13, 13.45]	**172.11**	95.93	2414 (8)	1, 5, 12, 14, 20, 21, 22, 23
			$Q_\Delta = 58.16$, $p < .001$			
Official recidivism criteria	5.88 [5.54, 6.21]	6.97 [4.72, 9.61]	**415.21**	95.42	18918 (20)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2
Arrests	4.52 [4.05, 5.00]	4.52 [4.05, 5.00]	0.83	0	7208 (3)	4.2, 25.1, 27.2
Charges	15.20 [13.27, 17.23]	13.98 [7.06, 22.78]	**86.58**	95.38	1262 (5)	1, 5, 6.1, 7.1, 14
Convictions	5.99 [5.54, 6.45]	5.27 [3.53, 7.32]	**178.35**	93.82	10448 (12)	9, 10.2, 12, 15.1, 17, 18, 19, 20, 21, 22, 23, 24
			Q_Δ =140.66, $p < .001$			
Official recidivism criteria (*outlier removed, 14*)	5.51 [5.19, 5.84]	6.10 [4.48, 7.45]	**236.25**	92.38	18435 (19)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2
Arrests	4.52 [4.05, 5.00]	4.52 [4.05, 5.00]	0.83	0	7208 (3)	4.2, 25.1, 27.2
Charges	9.34 [7.40, 11.49]	10.90 [5.56, 17.75]	**20.93**	85.67	779 (4)	1, 5, 6.1, 7.1
Convictions	5.99 [5.54, 6.45]	5.27 [3.53, 7.32]	**178.13**	93.82	10448 (12)	9, 10.2, 12, 15.1, 17, 18, 19, 20, 21, 22, 23, 24
			$Q_\Delta = 36.14$, $p < .001$			
Type of follow-up period	5.93 [5.60, 6.27]	7.21 [4.99, 9.81]	**426.75**	95.31	19112 (21)	1, 4.2, 5, 6.1, 7.1, 9, 10.2, 12, 14, 15.1, 17, 18, 19, 20, 21, 22, 23, 24, 25.1, 27.2, 28
Fixed	6.07 [5.65, 6.50]	5.49 [3.35, 8.12]	**147.71**	94.58	12265 (9)	1, 4.2, 5, 9, 12, 19, 20, 23, 27.2
Variable	5.69 [5.16, 6.26]	8.75 [5.32, 12.93]	**277.91**	96.04	6847 (12)	6.1, 7.1, 10.2, 14, 15.1, 17, 18, 21, 22, 24, 25.1, 28
			$Q_\Delta = 1.13$, $p = .288$			

Note. Any CSEM = overall group of individuals with Child Sexual Exploitation Material (CSEM) offenses, *k* = number of samples, Q_Δ = *Q*-change. Self-report samples (*k* = 4) were excluded except for the *recidivism definition* analysis.
Bolded values are significant at $p < .001$; *p*-values are based on the chi-square distribution with degrees of freedom equal to $k - 1$.
[a] Other countries included UK, Australia, Switzerland, New Zealand, Germany, Netherlands, Finland, and Spain (see Table s1 for descriptive information).
[b] The analysis could not be conducted on any sex recidivism due to insufficient power; therefore, it was performed on CSEM recidivism instead.
[c] Excluded studies that reported more than one recidivism source.

essential to reserve resource-intensive outcomes (e.g., lengthy sentence, registration, intensive treatment/supervision) to those identified as higher risk using validated assessment tools like STABLE-2007 and CPORT, which effectively identify CSEM individuals more likely to reoffend (Babchishin et al., 2023; Eke et al., 2024; see Helmus et al., 2025, for review). In summary, a focused approach that prioritizes recidivism risk is crucial for effectively managing CSEM offending and enhancing community safety.

CRediT authorship contribution statement

Serra Baskurt: Writing – review & editing, Funding acquisition,

Table 6
Unstandardized fixed-effect meta-regression analysis testing continuous moderators on any sex recidivism among any CSEM.

Moderator	*B*	SE	95 % CI	*Z*	*p*	*k*
Age	0.01	2*e*−4 (0.0002)	0.0101, 0.0110	44.34	<.001	9
Study year	0.002	0*e*−4 (0.0000)	0.0002, 0.0003	68.04	<.001	21
Follow-up length	0.01	1*e*−4 (0.0001)	0.0092, 0.0098	63.58	<.001	21
Any prior offenses	0.02	4*e*−4 (0.0004)	0.0162, 0.0176	45.74	<.001	14
Prior sex offenses	0.03	8*e*−4 (0.0008)	0.0307, 0.0337	42.18	<.001	12
Prior violent offenses	0.05	1.6*e*−3 (0.0016)	0.0458, 0.0523	29.87	<.001	8

Note. *k* = number of samples. Self-report samples (*k* = 4) were excluded from the analyses.

Data curation, Writing – original draft, Formal analysis. **Kelly M. Babchishin:** Writing – original draft, Project administration, Data curation, Writing – review & editing, Supervision, Methodology, Conceptualization. **Gabriella Hilkes:** Writing – review & editing, Data curation, Formal analysis. **Michael C. Seto:** Writing – review & editing, Conceptualization.

Funding sources

This work was partially supported by the Social Sciences and Humanities Research Council of Canada and the Ontario Graduate Scholarship (S. Baskurt & G. Hilkes).

Declaration of competing interest

The authors have no declarations of interest.

Appendix A

Table 1A
List of included samples from Seto et al. (2011) and the current meta-analysis.

Current meta-analysis	Seto et al. (2011)
1. Babchishin et al. (2023)	-
2. Beier et al. (2015)	-
3. Black (2018)	-
4.1 Cohen and Spidell (2016)	-
4.2 Cohen (2023)	-
4.3. Cohen (2018)	-
5. Dowling et al. (2021)	-
6.1. Eke et al. (2019) Development	-
6.2. Eke et al. (2011)	-
6.3. Seto and Eke (2005)	-
6.4. Seto and Eke (2008)	Seto and Eke (2008)
7.1. Eke et al. (2024) Validation	-
7.2. Babchishin, Lee, et al. (2022)	-
7.3. Eke et al. (2019)	-
7.4. Eke and Seto (2023)	-
7.5. Helmus et al. (2024)	-
7.6. Seto and Eke (2015)	-
8.1. Endrass et al. (2009)	Endrass et al. (2009)
8.2. Endrass and Rossegger (2010)	-
9. Emeagi et al. (2024)	-
10.1. Faust et al. (2015)	-
10.2. Faust et al. (2009)	Faust et al. (2009)
11. Franqué et al. (2023)	-
12. Ghossoub and Khoury (2020)	-
13.1. Goller et al. (2016)	-
13.2. Goller et al. (2010)	-
14.1 Henshaw (2017)	-
14.2 Henshaw et al. (2018)	-
15.1. Howard et al. (2014)	-
15.2. Wakeling et al. (2011)	-
15.3. Webb et al. (2007)	Webb et al. (2007)
15.4. Howard et al. (2015)	-
15.5. Barnett et al. (2010)	Barnett et al. (2010)
15.6. Elliott et al. (2019)	-
15.7. Howard (2009)	-
15.8. Osborn et al. (2010)	Osborn et al. (2010)
16. Howell (2018)	-
17. Jung et al. (2013)	-
18. Krone and Smith (2017)	-
19. Laajasalo et al. (2020)	-
20. Latimer (2003)	-
21. Paquette et al. (2025)	-
22. Pilon (2016)	-
23. Savoie et al. (2022)	-

(*continued on next page*)

Table 1A (*continued*)

Current meta-analysis	Seto et al. (2011)
24. Schuhmann et al. (2016)	-
25.1. Soldino et al. (2021)	-
25.2. Soldino et al. (2019)	-
26. Steel et al. (2021)	-
27.1. *United States Sentencing Commission (2012)	-
27.2. *United States Sentencing Commission (2021)	-
28. Wijk and Esseveldt (2021)	-
29. Wild et al. (2020)	-
30. Wollert et al. (2009)	Wollert et al. (2009)
31. Eke and Seto (2009)	Eke and Seto (2009)[a]
32. Fortin and Roy (2007)	Fortin and Roy (2007)[a]

[a] Assumed overlap (>25 %) with Ontario samples (Studies #6 and #7).

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.avb.2025.102080.

Data availability

The data and syntax have been made available on Open Science Framework.

References[3]

Aebi, M., Vogt, G., Plattner, B., Steinhausen, H. C., & Bessler, C. (2012). Offender types and criminality dimensions in male juveniles convicted of sexual offenses. *Sexual Abuse, 24*(3), 265–288. https://doi.org/10.1177/1079063211420449

Babchishin, K. M., Dibayula, S., McCulloch, C., Hanson, R. K., & Helmus, L. M. (2023). ACUTE-2007 and STABLE-2007 predict recidivism for men adjudicated for child sexual exploitation material offending. *Law and Human Behavior, 47*(5), 606–618. https://doi.org/10.1037/lhb0000540 (Study ID #1).

Babchishin, K. M., Eke, A. W., Lee, C., Lewis, N. S., & Seto, M. C. (2022). Applying offending trajectory analyses to men adjudicated for child sexual exploitation material offenses. *Criminal Justice and Behavior, 49*(8), 1095–1114. https://doi.org/10.1177/00938548211040849

Babchishin, K. M., Hanson, R. K., & Hermann, C. A. (2011). The characteristics of online sex offenders: A meta-analysis. *Sexual Abuse: A Journal of Research and Treatment, 23*, 92–123. https://doi.org/10.1177/1079063210370708

Babchishin, K. M., Hanson, R. K., & VanZuylen, H. (2015). Online child pornography offenders are different: A meta-analysis of the characteristics of online and offline sex offenders against children. *Archives of Sexual Behavior, 44*, 45–66. https://doi.org/10.1007/s10508-014-0270-x

Babchishin, K. M., & Helmus, L. M. (2013). *How-to guide: Running moderator analyses* (Unpublished manuscript).

Babchishin, K. M., Lee, S. C., Eke, A. W., & Seto, M. C. (2022). Temporal order of sexual offending is risk-relevant for individuals with child sexual exploitation materials offences. *Sexual Offending: Theory, Research, and Prevention, 17*, 1–22. https://doi.org/10.5964/sotrap.7229 (Study ID #7.2).

Babchishin, K. M., Merdian, H. L., Bartels, R. M., & Perkins, D. (2018). Child sexual exploitation materials offenders: A review. *European Psychologist, 23*(2), 130–143. https://doi.org/10.1027/1016-9040/a000326

*Barnett, G. D., Wakeling, H. C., & Howard, P. D. (2010). An examination of the predictive validity of the Risk Matrix 2000 in England and Wales. *Sexual Abuse: Journal of Research and Treatment, 22*(4), 443–470. https://doi.org/10.1177/1079063210384274 (Study ID #15.5).

Baskurt, S., O'Donaghy, M., & Babchishin, K. M. (2024, February). Comparative analysis of CSEM-Exclusive and Mixed offending characteristics: A cumulative meta-analysis. Paper presented at the Saint Mary's University 4th Annual Canadian Forensic Psychology Virtual Conference. Available at https://carleton.ca/sexuallyharmfulbehaviourslab/wp-content/uploads/SMU_SB.pdf.

*Beier, K. M., Grundmann, D., Kuhle, L. F., Scherner, G., Konrad, A., & Amelung, T. (2015). The German Dunkelfeld Project: A pilot study to prevent child sexual abuse and the use of child abusive images. *The Journal of Sexual Medicine, 12*(2), 529–542. https://doi.org/10.1111/jsm.12785 (Study ID #2).

Beier, K. M., Nentzl, J., von Heyden, M., Antfolk, J., Tenbergen, G., Wischnewski, M., & Dunkelfeld Research Network. (2024). Preventing child sexual abuse and the use of child sexual abuse materials: Following up on the German Prevention Project Dunkelfeld. *Journal of Prevention, 45*, 881–900. https://doi.org/10.1007/s10935-024-00792-0

*Black, C. (2018). *Predicting recidivism among an adult male child sexual abuse imagery offender population with the Child Pornography Offender Risk Tool Short Version (CPORT-SV): A New Zealand validation study*. U.C. Library. https://ir.canterbury.ac.nz/items/4e82ae9d-fbb5-4617-a9cb-3e975dc3ac17 (Master's thesis, University of Canterbury, Study ID #3).

Bonta, J., & Andrews, D. A. (2007). The risk-need-responsivity model of assessment and human service in prevention and corrections: Crime-prevention jurisprudence. *The Canadian Journal of Criminology and Criminal Justice, 49*, 439–464. https://doi.org/10.3138/cjccj.49.4.439

Bonta, J., & Andrews, D. A. (2023). *The psychology of criminal conduct* (7th ed.). Routledge. https://doi.org/10.4324/9781003292128

Borenstein, M. (2022). In a meta-analysis, the I-squared statistic does not tell us how much the effect size varies. *Journal of Clinical Epidemiology, 152*, 281–284. https://doi.org/10.1016/j.jclinepi.2022.10.003

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. John Wiley & Sons.

Brankley, A. E., Babchishin, K. M., & Hanson, R. K. (2021). STABLE-2007 demonstrates predictive and incremental validity in assessing risk-relevant propensities for sexual offending: A meta-analysis. *Sexual Abuse, 33*(1), 34–62. https://doi.org/10.1177/1079063219871572

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum. https://doi.org/10.4324/9780203771587

*Cohen, T. H. (2018). Predicting sex offender recidivism: Using the Federal Post Conviction Risk Assessment Instrument to assess the likelihood of recidivism among federal sex offenders. *Journal of Empirical Legal Studies, 15*(3), 456–481. https://doi.org/10.1111/jels.12184 (Study ID #4.3).

*Cohen, T. H. (2023). Building a risk tool for persons placed on federal post-conviction supervision for Child Sexual Exploitation Material offenses: Documenting the federal system's past, current, and future efforts. *Federal Probation, 87*(1), 19–31. Retrieved from https://www.uscourts.gov/file/76351/download (Study ID #4.2).

*Cohen, T. H., & Spidell, M. C. (2016). How dangerous are they? An analysis of sex offenders under federal post-conviction supervision. *Federal Probation, 80*(2), 21–32. Retrieved from https://www.uscourts.gov/sites/default/files/80_2_4_0.pdf (Study ID #4.1).

Council of State Governments'' Justice Center Report. (2024). 50 States, 1 Goal: Examining state-level recidivism trends in the Second Chance Act era. Retrieved from. Justice Center. https://csgjusticecenter.org/publications/50-states-1-goal/.

Covidence. (2024). *Covidence systematic review software*. Melbourne, Australia: Veritas Health Innovation. Available at www.covidence.org.

Cumming, G., & Finch, S. (2005). Inference by eye: Confidence intervals and how to read pictures of data. *The American Psychologist, 60*(2), 170–180. https://doi.org/10.1037/0003-066X.60.2.170

*Dowling, C., Morgan, A., & Pooley, K. (2021). Reoffending among child sexual offenders. *Trends and Issues in Crime and Criminal Justice, 628*, 1–16. https://doi.org/10.52922/ti78085 (Study ID #5).

Drouin, M., Boyd, R. L., & Greidanus Romaneli, M. (2018). Predicting recidivism among internet child sex sting offenders using psychological language analysis. *Cyberpsychology, Behavior and Social Networking, 21*(2), 78–83. https://doi.org/10.1089/cyber.2016.0617

Drouin, M., Boyd, R. L., Hancock, J. T., & James, A. (2017). Linguistic analysis of chat transcripts from child predator undercover sex stings. *The Journal of Forensic Psychiatry & Psychology, 28*(4), 437–457. https://doi.org/10.1080/14789949.2017.1291707

Eisenhart, C. (1947). Inverse sine transformation of proportions. In C. Eisenhart, M. W. Hastay, & W. A. Wallis (Eds.), *Selected techniques of statistical analysis for scientific and industrial research and production and management engineering* (pp. 395–416). New York, NY: McGraw-Hill.

Eke, A. W., & Seto, M. C. (2009). *Ontario Sex Offender Registry sample independent of police case sample reported by Seto and Eke (2008)*. Unpublished raw data.

Eke, A. W., Babchishin, H. M., Paquette, S., Scott, S. B., Batinic, M., Fortin, F., & Seto, M. C. (2024). Comparing the Static-99R and the Child Pornography Offender Risk Tool (CPORT) in two Canadian samples adjudicated of child sexual exploitation material offenses. *Journal of Criminal Justice, 95*, Article 102303. https://doi.org/10.1016/j.jcrimjus.2024.102303

[3] References marked with an asterisk were included in the meta-analysis.

Eke, A. W., Helmus, L. M., & Seto, M. C. (2018). Scoring guide for the child pornography offender risk tool (CPORT): Version 2. Seto & Eke. https://www.researchgate.net/project/Child-Pornography-Offender-Risk-Tool-CPORT.

*Eke, A. W., Helmus, L. M., & Seto, M. C. (2019). A validation study of the Child Pornography Offender Risk Tool (CPORT). *Sexual Abuse, 31*(4), 456–476. https://doi.org/10.1177/1079063218762434 (Study ID #7.3).

*Eke, A. W., & Seto, M. C. (2023). Correspondence of child age and gender distribution in Child Sexual Exploitation Material and other child content with age and gender of child sexual assault victims. *Sexual Abuse, 35*(3), 375–397. https://doi.org/10.1177/10790632221108951 (Study ID #7.4).

Eke, A. W., Seto, M. C., & Williams, J. (2011). Examining the Criminal History and Future Offending of Child Pornography Offenders: An Extended Prospective Follow-up Study. *Law and Human Behavior, 35*, 466–478. https://doi.org/10.1007/s10979-010-9252-2

Elliott, I. A., Beech, A. R., Mandeville-Norden, R., & Hayes, E. (2009). Psychological profiles of internet sexual offenders: Comparisons with contact sexual offenders. *Sexual Abuse, 21*(1), 76–92. https://doi.org/10.1177/1079063208326929

*Elliott, Mandeville-Norden, R., Rakestrow-Dickens, J., & Beech, A. R. (2019). Reoffending rates in a U.K. community sample of individuals with convictions for indecent images of children. *Law and Human Behavior, 43*(4), 369–382. https://doi.org/10.1037/lhb0000328 (Study ID #15.6).

*Emeagi, C., Sullivan, L., Landsiedel, J., Craik, A., & Howard, P. (2024). The actuarial prediction of sexual reoffending responding to changing offending patterns. In *Ministry of Justice Analytical series*. London: Ministry of Justice. Retrieved from https://www.gov.uk/government/publications/actuarial-prediction-of-sexual-reoffending-responding-to-changing-offending-patterns (unnumbered, Study ID #9).

*Endrass, J., & Rossegger, A. (2010). P02-56 - Child pornography as a risk factor for hands on sex-offending? *European Psychiatry, 25*(S1), 676. https://doi.org/10.1016/S0924-9338(10)70670-2 (Study ID #8.2).

*Endrass, J., Urbaniok, F., Hammermeister, L. C., Benz, C., Elbert, T., Laubacher, A., & Rossegger, A. (2009). The consumption of internet child pornography and violent and sex offending. *BMC Psychiatry, 9*(1), 43. https://doi.org/10.1186/1471-244X-9-43 (Study ID #8.1).

*Faust, E., Bickart, W., Renaud, C., & Camp, S. (2015). Child pornography possessors and child contact sex offenders: A multilevel comparison of demographic characteristics and rates of recidivism. *Sexual Abuse, 27*(5), 460–478. https://doi.org/10.1177/1079063214521469 (Study ID #10.1).

*Faust, E., Renaud, C., & Bickart, W. (2009). *Predictors of re-offense among a sample of federally convicted child pornography offenders* (PowerPoint slides, Study ID #10.2).

Fleiss, J. L., Levin, B., & Paik, M. C. (2003). Statistical methods for rates and proportions. In*Social Networking* (3rd ed., vol. 8(1)). Hoboken: Wiley. https://doi.org/10.1002/0471445428.

Fortin, F., & Roy, J. (2007). Cyberpédophilie: profiles d'amateur de pédopornographie. [Cyberpedophilia: Profiles of users of child pornography]. In M. St-Yves, & M. Tanguay (Eds.), *Psychologie des entrevues d'enquête: De la recherche à la pratique [The psychology of investigative interviews: From research to practice]* (pp. 465–502). Cowansville, Québec, Canada: Éditions Yvon Blais.

Franqué, F., Bergner-Koether, R., Schmidt, S., Pellowski, J. S., Peters, J. H., Hajak, G., & Briken, P. (2023). Individuals under voluntary treatment with sexual interest in minors: What risk do they pose? *Frontiers in Psychiatry, 14*, Article 1277225. https://doi.org/10.3389/fpsyt.2023.1277225 (Study ID #11).

*Ghossoub, E., & Khoury, R. (2020). Characteristics of older adult first-time sex offenders: Insights from the Missouri Registry. *The American Journal of Geriatric Psychiatry, 29*(3), 230–238. https://doi.org/10.1016/j.jagp.2020.06.020 (Study ID #12).

*Goller, A., Graf, M., Frei, A., & Dittmann, V. (2010). Recidivism of internet sex offenders – An epidemiologic study on more than 4600 offenders in Switzerland. *European Psychiatry, 25*(Suppl. 1), Article 1533. https://doi.org/10.1016/S0924-9338(10)71516-9 (Study ID #13.2).

*Goller, A., Jones, R., Dittmann, V., Taylor, P., & Graf, M. (2016). Criminal recidivism of illegal pornography offenders in the overall population—A national cohort study of 4612 offenders in Switzerland. *Advances in Applied Sociology (Irvine, CA), 6*(2), 48–56. https://doi.org/10.4236/aasoci.2016.62005 (Study ID #13.1).

Government of Canada. (2019, March). Sexual violations against children and child pornography. Government of Canada. https://www.justice.gc.ca/eng/rp-pr/jr/jf-pf/2019/mar02.htm.

Hamilton, M. (2011). The efficacy of severe child pornography sentencing: Empirical validity or political rhetoric. *Stanford Law & Policy Review, 22*, 545. Retrieved from https://openresearch.surrey.ac.uk/esploro/outputs/journalArticle/The-Efficacy-of-Severe-Child-Pornography/99513320602346.

Hanson, R. K., Helmus, L.-M., & Harris, A. J. R. (2015). Assessing the risk and needs of supervised sexual offenders: A prospective study using STABLE-2007, Static-99R, and Static-2002R. *Criminal Justice and Behavior, 42*(12), 1205–1224. https://doi.org/10.1177/0093854815602094

Hanson, R. K., & Morton-Bourgon, K. E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology, 73*(6), 1154–1163. https://doi.org/10.1037/0022-006X.73.6.1154

Hanson, R. K., Thornton, D., Helmus, L. M., & Babchishin, K. M. (2016). What sexual recidivism rates are associated with Static-99R and Static-2002R scores? *Sexual Abuse, 28*(3), 218–252. https://doi.org/10.1177/1079063215574710

Harris, A. J. R., & Hanson, R. K. (2004). Sex offender recidivism: A simple question (corrections research user report 2004-03; catalogue no. PS3-1/2004-3). Public Safety Canada. https://publications.gc.ca/site/eng/9.539742/publication.html.

Hedges, L. V., & Vevea, J. L. (1998). Fixed- and random-effects models in meta-analysis. *Psychological Methods, 3*(4), 486–504. https://doi.org/10.1037/1082-989X.3.4.486

Helmus, L. M. (2023). *Recidivism rates of men charged/convicted of child pornography offences. Association for the Treatment of Sexual Abuse* (Vol. 35(2)). SAARNA. Retrieved from https://saarna.org/download/recidivism-rates-of-men-charged-convicted-of-child-pornography-offences/.

*Helmus, L. M., Eke, A. W., Farmus, L., & Seto, M. C. (2024). The CPORT and Risk Matrix 2000 for men convicted of Child Sexual Exploitation Material (CSEM) offenses: A predictive accuracy comparison and meta-analysis. *Criminal Justice and Behavior, 51*(1), 3–23. https://doi.org/10.1177/00938548231208194 (Study ID #7.5).

Helmus, L. M., Eke, A. W., & Seto, M. C. (2025). What risk assessment tools can be used with men convicted of child sexual exploitation material offenses? Recommendations from a review of current research. *Law and Human Behavior, 49*(1), 71–88. https://doi.org/10.1037/lhb0000594

Helmus, L. M., Lee, S. C., Phenix, A., Hanson, R. K., & Thornton, D. (2021). Static-99R and Static-2002R evaluator workbook. Retrieved from. SAARNA. https://saarna.org/.

*Henshaw, M. (2017). *The demographic, mental health and offending characteristics of online child pornography offenders: A comparison with contact-only and dual sexual offenders*. Wiley Online Library. https://doi.org/10.1002/bsl.2337 (Doctoral dissertation, Swinburne University of Technology, Study ID #14).

*Henshaw, M., Ogloff, J. R. P., & Clough, J. A. (2018). Demographic, mental health, and offending characteristics of online child exploitation material offenders: A comparison with contact-only and dual sexual offenders. *Behavioral Sciences & the Law, 36*(2), 215–232. https://doi.org/10.1002/bsl.2337 (Study ID #14).

*Howard, P. (2009). Predictive validity of OASys. Improving prediction of general and violent reoffending. In M. Debidin (Ed.), *Ministry of Justice research series, 16/09A compendium of research and analysis on the Offender Assessment System (OASys) 2006–2009*. London: Ministry of Justice. Retrieved from https://www.cep-probation.org/wp-content/uploads/2018/10/Debdin-Compendium-of-OASys-research.pdf (Study ID #15.7).

*Howard, P. D., Barnett, G. D., & Mann, R. E. (2014). Specialization in and within sexual offending in England and Wales. *Sexual Abuse, 26*(3), 225–251. https://doi.org/10.1177/1079063213486934 (Study ID #15.1).

*Howard, P. D., Barnett, G. D., & Wakeling, H. C. (2015). Predicting nonsexual violent reoffending by sexual offenders: A comparison of four actuarial tools. *Legal and Criminological Psychology, 20*(2), 267–287. https://doi.org/10.1111/lcrp.12027 (Study ID #15.4).

*Howell, M. J. (2018). *Implicit theories of child sexual exploitation material users: Can they differentiate those also at risk of contact offending?* U.C. Library. https://ir.canterbury.ac.nz/items/d868bedc-deea-4998-b26f-226aac61c7a6 (Master's thesis, University of Canterbury, Study ID #16).

International Justice Mission. (2020, October). Falling short: Demand-side sentencing for online sexual exploitation of children. IJM. https://www.ijmuk.org/documents/IJM-SUMMARY-FALLING-SHORT-Demand-Side-Sentencing-for-Online-Sexual-Exploitation-of-Children-October-2020-002.pdf.

*Jung, S., Ennis, L., Stein, S., Choy, A. L., & Hook, T. (2013). Child pornography possessors: Comparisons and contrasts with contact- and non-contact sex offenders. *The Journal of Sexual Aggression, 19*(3), 295–310. https://doi.org/10.1080/13552600.2012.741267 (Study ID #17).

*Krone, T., & Smith, R. G. (2017). Trajectories in online child sexual exploitation offending in Australia. *Trends and Issues in Crime and Criminal Justice, 524*, 1–13. https://www.aic.gov.au/sites/default/files/2020-05/tandi524.pdf (Study ID #18).

Krueger, R. B., Kaplan, M. S., & First, M. B. (2009). Sexual and other Axis I diagnoses of 60 males arrested for crimes against children involving the Internet. *CNS Spectrums, 14*(11), 623–631. https://doi.org/10.1017/S1092852900027765

Kuhle, L., Schlinzig, E., Kaiser, G., et al. (2017). The association of sexual preference and dynamic risk factors with undetected child pornography offending. *Journal of Sexual Aggression, 23*(1), 3–18. https://doi.org/10.1080/13552600.2017.1321116

*Laajasalo, T., Ellonen, N., Korkman, J., Pakkanen, T., & Aaltonen, O.-P. (2020). Low recidivism rates of child sex offenders in a Finnish 7-year follow-up. *Nordic Journal of Criminology, 21*(1), 103–113 (Study ID# 19).

*Latimer, J. (2003). Child sexual exploitation in Canada: Incidence, sentencing and recidivism. Government of Canada. https://www.justice.gc.ca/eng/rp-pr/jr/jr13/p5d.html#sec4 (Study ID #20).

Letourneau, E., Armstrong, K., Bandyopadhyay, D., & Sinha, D. (2013). Sex offender registration and notification policy increases juvenile plea bargains. *Sexual Abuse, 25*(2), 189–207. https://doi.org/10.1177/1079063212455667

Long, M., Alison, L., Tejeiro, R., Hendricks, E., & Giles, S. (2016). *Kent Internet Risk Assessment Tool—Version 2 (KIRAT–2)*. APA PsycTests. https://doi.org/10.1037/t48493-000 (Database record).

National Academies Press Report. (2022). *The limits of recidivism: Measuring success after prison*. Washington, DC: The National Academies Press. https://doi.org/10.17226/26459

Neil, R., & Sampson, R. J. (2021). Social change and cohort differences in group-based arrest trajectories over the last quarter-century. *Proceedings of the National Academy of Sciences of the United States of America, 118*(31), Article e2107020118. https://doi.org/10.1073/pnas.2107020118

Neutze, J., Seto, M., Schaefer, G., Mundt, I., & Beier, K. M. (2011). Predictors of child pornography offenses and child sexual abuse in a community sample of pedophiles and hebephiles. *Sexual Abuse: A Journal of Research and Treatment, 23*, 212–242. https://doi.org/10.1177/1079063210382043

Nicol, S. J., Harris, D. A., Kebbell, M. R., & Ogilvie, J. (2021). Online Child Sexual Exploitation Material: A comparison from police data on men charged with Child Sexual Exploitation Material exclusively and men charged with contact child sexual abuse exclusively. *Sexual Offending: Theory, Research, and Prevention, 16*, 1–18. https://doi.org/10.5964/sotrap.4301

*Osborn, J., Elliott, I., Middleton, D., & Beech, A. (2010). The use of actuarial risk assessment measures with UK internet child pornography offenders. *Journal of Aggression, Conflict and Peace Research, 2*(3), 16–24. https://doi.org/10.5042/jacpr.2010.0333 (Study ID #15.8).

*Paquette, S., Eke, A. W., Babchishin, K. M., Seto, M. C., Scott, S., & Fortin, F. (2025). *Risk assessment with individuals involved with Child Sexual Exploitation Material: Applying the Static-99R and the Child Pornography Offender Risk Tool (CPORT) in two Canadian samples* (unpublished data, Study ID #21).

*Pilon, A. (2016). *The predictive validity of general and offence-specific risk assessment tools for child pornography offenders' reoffending.* Harvest Library. https://harvest.usask.ca/items/84bdb9e2-5d5c-4925-9378-8e1fd80c1193 (Master's thesis, University of Saskatchewan, Study ID #22).

Savage, L. (2024). Online child sexual exploitation: A statistical profile of police-reported incidents in Canada, 2014 to 2022. *Juristat*, 4–29. https://www150.statcan.gc.ca/n1/pub/85-002-x/2024001/article/00003-eng.htm.

*Savoie, V., Quayle, E., Flynn, E., & O'Rourke, S. (2022). Predicting risk of reoffending in persons with Child Sexual Exploitation Material offense histories: The use of Child Pornography Offender Risk Tool in a Scottish population. *Sexual Abuse, 34*(5), 568–596. https://doi.org/10.1177/10790632211047190 (Study ID #23).

Schmidt, A. F., Babchishin, K. M., & Lehmann, R. J. B. (2017). A meta-analysis of viewing time measures of sexual interest in children. *Archives of Sexual Behavior, 46*(1), 287–300. https://doi.org/10.1007/s10508-016-0806-3

*Schuhmann, P., Neutze, J., & Osterheider, M. (2016). Rückfälle nach sexuellem kindesmissbrauch und kinderpornografiedelikten in Deutschland/Recidivism rates of child sexual abuse and child pornography offences in Germany. *Monatsschrift Für Kriminologie Und Strafrechtsreform, 99*(5) [Study ID #24].

Seiser, A., Eher, R., Turner, D., & Rettenberger, M. (2023). The prevalence of mental disorders among incarcerated adult men convicted of child sexual exploitation material offenses. *CNS Spectrums, 28*(6), 719–725. https://doi.org/10.1017/S1092852923002262

Seto, M. C. (2013). *Internet sex offenders*. Washington, DC: American Psychological Association.

Seto, M. C. (2025). *Online sexual offending: Theory, practice, and policy* (2nd ed.). Washington, DC: American Psychological Association.

*Seto, M. C., & Eke, A. W. (2005). The criminal histories and later offending of child pornography offenders. *Sexual Abuse, 17*(2), 201–210. https://doi.org/10.1007/s11194-005-4605-y (Study ID #6.2).

*Seto, M. C., & Eke, A. W. (2008). *Predicting new offenses committed by child pornography offenders. Paper presented at the 27th Annual Conference of the Association for the Treatment of Sexual Abusers, Atlanta, GA.* , October. (Study ID #6.3).

*Seto, M. C., & Eke, A. W. (2015). Predicting recidivism among adult male child pornography offenders: Development of the Child Pornography Offender Risk Tool (CPORT). *Law and Human Behavior, 39*, 416–429. https://doi.org/10.1037/lhb0000128 (Study ID #7.6).

Seto, M. C., & Eke, A. W. (2024). Child sexual exploitation material offenses: Differences in individual and case characteristics based on how they came to attention of police. *Police Practice and Research*, 1–19. https://doi.org/10.1080/15614263.2024.2342782

Seto, M. C., Hanson, R. K., & Babchishin, K. M. (2011). Contact sexual offending by men with online sexual offenses. *Sexual Abuse: A Journal of Research and Treatment, 23*(1), 124–145. https://doi.org/10.1177/1079063210369013

*Soldino, V., Carbonell-Vaya, E. J., & Seigfried-Spellar, K. C. (2019). Criminological differences between child pornography offenders arrested in Spain. *Child Abuse & Neglect, 98*, Article 104178. https://doi.org/10.1016/j.chiabu.2019.104178 (Study ID #25.2).

*Soldino, V., Carbonell-Vayá, E. J., & Seigfried-Spellar, K. C. (2021). Spanish validation of the Child Pornography Offender Risk Tool. *Sexual Abuse, 33*(5), 503–528. https://doi.org/10.1177/1079063220928958 (Study ID #25.1).

*Steel, C. M. S., Newman, E., O'Rourke, S., & Quayle, E. (2021). Collecting and viewing behaviors of child sexual exploitation material offenders. *Child Abuse & Neglect, 118*, Article 105133. https://doi.org/10.1016/j.chiabu.2021.105133 (Study ID #26).

Steiker, C. S. (2013). Lessons from two failures: Sentencing for cocaine and child pornography under the federal sentencing guidelines in the United States. *Law and Contemporary Problems, 76*(1), 27–52. https://scholarship.law.duke.edu/lcp/vol76/iss1/3.

STROBE Initiative. (2025). STROBE checklists. https://www.strobe-statement.org/checklists/.

United States Department of Justice. (2016, April). *The national strategy for child exploitation prevention and interdiction: A report to congress*. Washington, DC: USDOJ. Retrieved from https://www.justice.gov/d9/pages/attachments/2016/04/19/2016_natl_strategy_rpt_-_online_version_updated_final_08_16_2016.pdf.

*United States Sentencing Commission. (2012). Federal child pornography offenses. Retrieved from https://www.ussc.gov/research/congressional-reports/2012-report-congress-federal-child-pornography-offenses (Study ID #27.1).

*United States Sentencing Commission. (2021). Federal sentencing of child pornography non-production offenses. Retrieved from https://www.ussc.gov/research/research-reports/federal-sentencing-child-pornography-non-production-offenses (Study ID #27.2).

*Wakeling, H. C., Howard, P., & Barnett, G. (2011). Comparing the validity of the RM2000 scales and OGRS3 for predicting recidivism by internet sexual offenders. *Sexual Abuse, 23*(1), 146–168. https://doi.org/10.1177/1079063210375974 (Study ID #15.2).

*Webb, L., Craissati, J., & Keen, S. (2007). Characteristics of internet child pornography offenders: A comparison with child molesters. *Sexual Abuse, 19*(4), 449–465. https://doi.org/10.1007/s11194-007-9063-2 (Study ID #15.3).

Wells, M., Finkelhor, D., Wolak, J., & Mitchell, K. J. (2007). Defining child pornography: Law enforcement dilemmas in investigations of internet child pornography possession. *Police Practice and Research, 8*, 269–282. https://doi.org/10.1080/15614260701450765

Whitehead, A. (2002). *Meta-analysis of controlled clinical trials*. Chichester, England: Wiley. https://doi.org/10.1002/0470854200

*Wijk, A. V., & Esseveldt, J. V. (2021). Criminal careers of extrajudicial Child Sexual Exploitation Material users; a longitudinal and comparative study. *Journal of Crime and Criminal Behavior, 1*(1), 53–68 (Study ID #28).

*Wild, T. S. N., Müller, I., Fromberger, P., Jordan, K., Klein, L., & Müller, J. L. (2020). Prevention of sexual child abuse: Preliminary results from an outpatient therapy program. *Frontiers in Psychiatry, 11*, 88. https://doi.org/10.3389/fpsyt.2020.00088 (Study ID #29).

Wolak, J., Finkelhor, D., & Mitchell, K. (2011). Child pornography possessors: Trends in offender and case characteristics. *Sexual Abuse: Journal of Research and Treatment, 23*(1), 22–42. https://doi.org/10.1177/1079063210372143

*Wollert, R., Waggoner, J., & Smith, J. (2009). Federal Internet child pornography offenders-Limited offense histories and low recidivism rates. In B. Schwartz (Ed.), *Vol. VII. The sex offender* (pp. 2-1–2-21). Kingston, N.J.: Civic Research Institute (Study ID #30).